Mobile users swat at notebook bugs

Laptop sales

Corp. in Framingham,

Mass., recently revised

its notebook market

forecast upward.

predicting that 4.7

nillion notebooks will

ship in the U.S. this

year, up from 3.5

million last year.

By Mindy Blodgett and April Jacobs

Mark McWhirter, vice president of information technology at Earle M. Jorgensen Co., thought the tough part of a large laptop and sales force automation deployment would be

persuading people to go mobile.

But the biggest hurdle turned out to be the laptops themselves - a shipment of about 230 Texas Instruments. Inc. Extensa 555 and 560 models. Many of them just didn't work, he said.

"One of the more serious problems was that you would go to turn on the machine. and it would say, 'Hard drive error, disk not found.'" McWhirter said. "It's been incredibly annoying."

He isn't alone. Users and industry observers have been complaining for months that vendors, in a rush to meet accelerating and unexpect-

edly high demand, are shipping laptops that haven't been adequately tested.

Users also face configuration problems when their machines are preloaded with outdated software.

"My theory is that people are rushing new-generation products out the door without spending as much

Laptop, page 135

Special Report: TAX SYSTEMS FIASCO



At a meeting last month of the National Commission on Restructuring the IRS, Sen. Bob Kerrey (D-Neb.), center, lambasted the IRS for failing to apply the right performance measures to its operations

IRS project failures cost taxpayers \$50B annually

By Gary H. Anthes WASHINGTON

t may be the most expensive systems development fiasco in history. Delays in overhauling the federal tax systems are costing the U.S. Treasury as much as \$50 billion per year, a Computerworld investigation has found.

That figure represents what the federal government could be collecting in additional taxes if the Internal Revenue Service had succeeded in its decade-long attempt to modernize its 1960s-era computer systems

Now trying for the third

time to revamp its tax collection systems, the IRS spends hundreds of millions of dollars annually on the effort. But critics say much of that money is wasted through mismanagement and primitive development practices. And IRS officials concede many of those points.

Yet direct expenditures on the IRS' \$8 billion Tax Systems Modernization program pale beside a less-noticed cost: the revenue that might have been.

The IRS admits that the lack of progress in developing new automated compliance tools stands in the way of its goal to boost tax collections IRS, page 28 INSIDE

The IRS wants more credit for its successes.

Election-year attacks put focus on the tax agency's budget. Page 29.

decades of tax systems modernization projects. Pages 28 and 29.

Corporate IS offers advice on avoiding similar mega-project fiascos. Page 30.

TSM unplugged – a look at the project's key pieces and price tags. Page 30.

Year 2000 crash course offers IS career payoff

Silver lining

- M Hone your management
- Work closely with senior managers to show them you understand business as well as technical issues
- Get a valuable and rare overview of your information technology infrastructure and business processes

By Robert L. Scheier

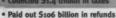
If scare tactics haven't forced you to start fixing your year 2000 problems, maybe this will: Tackling that messy job could help you develop skills you'll need long after the turn of the century.

Those information systems skills include project management, an ability to explain highly technical issues in business terms and indepth knowledge of a company's IS and business processes, said Bruce Hall, a research director at Gartner Group, Inc.

The very size and complexity that make year 2000 fixes so difficult are Year 2000, page 135

In 1995, the IRS:





· Handled 2 billion pieces of paper (a stack 200 miles high)

· Processed 206 million tax returns

Assisted 110 million taxpayers by telephone

• Spent \$25.6 billion overall

• Spent \$1.6 billion on Information systems overall

· Spent \$622 million on Tax Systems Modernization projects

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Seymour Cray 1925-1996

"Seymour's supercomputers allowed [us to find] cures for disease, made air and auto trav-

el safer, improved our ability to predict and prepare for nature's worst disasters and ended the Cold War." — Bo Ewald, president and chief operating officer, Cray Research, Inc., a subsidiary of Silicon Graphics, Inc.

"Since 1960, Seymour has given us the recipes for building computers that will continue well into the 21st century. The regret I feel, beyond his loss, is not being able to see his next machine."

— Gordon Bell, inventor of the VAX minicomputer

"Seymour's philosophy for hiring recent college graduates, people not yet bound by ... limits ... gave many young people the opportunity to create and innovate much of today's technology."

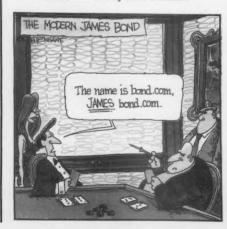
— Larry Ellison, CEO, Oracle Corp.

"So many of his ideas have been seminal to almost all computing systems large and small. . . . He had an incredible knack for developing high-performance systems with slow components. He was a master of architecture." — Tom Pyke, director of high performance computing and communications, National Oceanographic and Atmospheric Administration

"He inspired people aesthetically. His inventions were beautiful—it was not just engineering. He had a certain elegance and integrity to his design." — Danny Hillis, co-founder, Thinking Machines Corb.

"Seymour Cray was a visionary in the purest sense, having the ability to conceive new solutions and the courage not to waver from his convictions." — Scott McNealy, chairman, Sun Microsystems Inc.

The 5th Wave by Rich Tennant



Java top guns seek glory, not gold

By Julia King

Rumors of Java developers snagging salaries and signing bonuses of \$200,000 and more are just that: rumors.

Demand for Java talent is skyhigh, but the kind of money most Java developers earn won't buy them a spot at Millionaire Acres — at least not immediately.

More than money, the nearterm paybacks are the learning opportunities, adrenaline rush and sense of professional elitism that come with working on some of the industry's more leadingedge, high-profile projects.

Consider the case of Jay Janarthanan, 25, who took a 50% pay cut to earn \$500 per day working on a Java project at Nortel, Inc. in Ottawa. Janarthanan had been a consultant in New York and California, earning between \$800 and \$1,000 per day.

"The project we are doing at Nortel is putting Java in a cell phone, which is pretty interesting and a highly visible project," Janarthanan said. "With Java being a new technology, there's a lot of experimentation and things to

learn. Being on a project like this lets you do that. And once it's done, I can actually show people the cell phone."

Hands-on

Money also was a secondary consideration for Chris Laurel, a 25-year-old Java developer at Dimension X, Inc., a San Francisco-based company that specializes in Java-based multimedia software.

The firm tapped in to the Internet to recruit Laurel from his home in Minnesota.

"It was very important just to get a project that I could sort of run with on my own and completely define from the beginning," Laurel said.

What he ultimately came up with is Liquid Reality, a Javabased software tool that has

become the standard for creating three-dimensional pages on the World Wide Web. Yet Java skills alone won't win developers a coveted spot on leading-edge projects, employers said.

Far more important are an excellent knowledge of and experience in object-oriented software design.

"Java is a programming language, and in that regard, it's not that big of a deal. But knowing about object-oriented (design), plus Java, makes you very valuable," said Frank Greco, CEO of Crossroads Technologies, Inc., a systems integrator in New York.



Jay Janarthanan enjoys the learning opportunities that come with his Java work

News Shorts

Temps win court ruling

The 9th Circuit U.S. Court of Appeals last week ruled that several hundred temporary workers hired by Microsoft Corp. between 1987 and 1990 are eligible for 401(k) and stock purchase benefits, even though they had signed agreements waiving them. Microsoft has until Oct. 24 to appeal the ruling. If the ruling stands, Microsoft - and virtually any company that employs temporary contractors to supplement full-time personnel - could end up paying millions of dollars in back benefits to freelance workers.

Microsoft movies

Separately, Microsoft announced that it will bundle Microsoft Camcorder, a recorder and playback utility designed to let Office 97 users create and distribute audio and video files, with its forthcoming version of Office 97. Users who receive a stand-alone Camcorder .EXE file can play back the movie screen-capture even if they don't have Microsoft Camcorder installed on their machine.

Health care interface

The Andover Working Group, an Andover, Mass.-based coalition

of more than 130 technology vendors and health care companies, has released to its members the first in a series of HL7 specifications. HL7, or Health Level 7 Enterprise Communication Framework software, is a set of system interfaces designed to make it easier to transmit text-based data among health care applications. Hewlett-Packard Co. established The Andover Working Group in March.

Insurance over the 'net

Intuit, Inc.'s Quicken Insure-Market (www.insuremarket.com) will begin offering real-time rate quotes and online sales of term life insurance through the Internet later this year.

AS/400 shrinks

IBM last week unveiled an entrylevel version of the AS/400 for small departments and businesses. Due in November

the 64-bit AS/400 Advanced Entry will cost

\$7,995, offer a smaller size than normal AS/400s and include the DB2 relational database and decision-support utilities, wireless LAN and printing software. Company officials said the aim is to let small businesses grow easily with this machine rather than depend on PC servers for their processing needs.

Terrorism bill made law

President Clinton last week signed into law an aviation bill that authorizes a passenger profiling computer database as an antiterrorism measure. The provision will allow airlines to compare computer information, such as names, addresses and travel history, with government information on suspected terrorists. Privacy and civil liberties groups have criticized the provision, calling it a dangerous and unnecessary intrusion [CW, Oct. 7].

Lotus organizes Web

Lotus Development Corp. last week announced Lotus Organizer 97 Web Calendar. The software lets users, as well as colleagues they have approved, access their Organizer information from a Web browser. The features can be added at no cost to any user's Web browser. Support for Lotus' group scheduling features found in Notes 4.5 will be available next

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A PUBLICATION OF IN THIS SSILE

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Unconnected Oracle database will let network computer users work off-line.

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All the Web's a stage

Andy McGibbon worked backstage off-Broadway for years. Now, as webmaster at Playbill magazine. the stars come to watch his work.

See page 73.

Hardware pioneer Seymour Cray dies

By Gary H. Anthes

For Seymour R. Cray, the goal was simply stated, if not always easily met: "to make the fastest computers in the world."

And that's just what he did, starting in a St. Paul, Minn., glider factory in 1951 and ending 45 years later in Colorado Springs.

Cray, 71, died Oct. 5 from head injuries received in an automobile accident two weeks

earlier. **Tribute** To see Crav's

achievements in strictly quantitative terms - the fastest computers - overlooks the huge contribution he made to a discipline he helped create.

"Computational science" grapples with the problems that as a practical matter can't be solved by conventional computers.

For example, it doesn't do much good to develop a 12-hour weather forecast if it takes 24 hours of computer time to do it.

Seymour Cray didn't seem to care much about weather forecast-

ing, petroleum exploration or the design of drugs, cars and nuclear weapons - all of which he influenced considerably. To him, the name of the game was creating lightning-fast hardware, not applications

The amiable but intensely private computer designer was the quintessential nerd. He once told of how, as an engineering student at the University of Minnesota, he had been ribbed for using a circular slide rule because nearly everyone else used the "straight stick" kind.

But that willingness to buck conventional practices was the key to Cray's success over the years

In a rare interview two years ago, he told Computerworld, "You have to be prepared to fail, and I have failed about half the time, I guess. But you simply have to pick yourself up and go at it again with whatever insights you've gained from failure. If you do keep trying, you will occasionally do something worthwhile."

His string of successes ended in the early 1990s after he left Cray Research to start Cray Computer Corp. Believing silicon processors would soon reach their performance limits. Cray cast his lot with the much faster gallium arsenide.

But the processors were difficult to manufacture and Cray wasted years and hundreds of millions of dollars. And the demand for supercomputers plunged in post-Cold War years.

Cray said the secret to making computers faster was to make them smaller.

He speculated that molecular-

size circuits built by biological processes might hold promise for huge improvements in computer performance. "How do we train bacteria to make transistors?" Cray wondered. He wasn't joking.

When asked if he might soon retire, he said, "That frightens me. I will work as long as I am able."

The work of the legendary computer designer has come to a tragic end. But we will recall Seymour Cray every time we drive a car. fly in an airplane, take a modern medicine or dodge a hurricane.

@ COMPUTERWOOD **COME VISIT OUR WEB SITE**

Seymour Cray: If you keep try-

ing, you will occasionally do

something worthwhile'



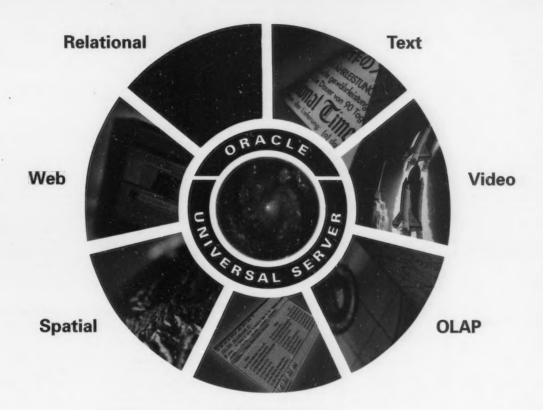
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Users discuss Oracle's strategy to connect intranets to corporate databases. So far, customers like it.

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Thin clients unplugged

Oracle plans database for network computers that aren't on a network

By Craig Stedman

Network computers may not be just for networks after all, if Oracle Corp. has its way.

One of the most fervent of the network computer prophets, Oracle is developing a network comnuter version of its single-user database that would let users do some work while disconnected from the network.

But such a move goes against the grain of the network computing concept, several users and analysts said last week

Officials at other companies that are developing thin clients, including IBM, Sun Microsystems, Inc. and HDS Network Systems, Inc., said devices with some disconnected capabilities aren't

completely out of the question But for now, they said, corporate interest in network computers is expected to come from customers who view the devices as the dumb terminals of the 1990s.

The network computer release of Personal Oracle Lite should be ready next year. Oracle officials

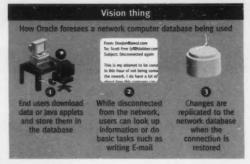
End users with such a database could download data and Java applets to their network computers and do basic processing while disconnected from the network. That would make it conceivable to have mobile or handheld network comnuters that would be less expensive to buy and support than fullfledged laptop computers, according to Oracle's vision.

Michael Anthony Jewelers, Inc.

is one prospective user that wants network computers to have as few capabilities as possible beyond the network, said Kalman Shor, assistant director of information services at the Mount Vernon N.Y., iewelry manufacturer.

"The reality of the way we do business sort of dictates that for us," Shor said. "A lot of the people here aren't very computer-savvy, and we're talking about gold bullion walking into this place and gold jewelry walking out. Even with our data, we want to keep close track of what's here."

Michael Anthony's PCs run Windows 3.1 off a server rather than having individual copies, and network devices would replicate that setup "with less cost up front and less of a box to get destroyed in the manufacturing environment," Shor said. The company is considering installing about 100 of IBM's upcoming Network



Station terminals he said

Other observers said a network computer with a database would also need local storage - which would make it look awfully similar

"I'm not exactly sure how to differentiate between a mobile [network computer] and a laptop," said Frank Tait, a vice president at SCT Education Systems. The Malvern. Pa., software vendor plans to support network computers

and use them internally as replacements for low-end PCs and Macintoshes

A new Windows version of Personal Oracle Lite, to be announced this week, requires 1M byte of memory and 5M bytes of hard-disk space. Oracle officials said they haven't decided whether the network computer version of the database would be stored on a disk or an alternative medium such as flash memory.

Network devices hot topic at Unix Expo

By Laura DiDio and Jaikumar Vijavan MEWVORK

That old X terminal never did catch on, but at last week's Unix Expo Plus in New York, attendees were starting to get excited about its direct descendant - a network computer attached to a Unix file server.

The idea of low-cost network access devices originated 10 years ago with X terminals, but the concept never went anywhere because potential users were scared off by Unix's "technical complexity," said Eileen O'Brien, an analyst at International Data Corp. in Framingham, Mass.

But the price advantage of a \$500 network device, combined with the scalability, reliability and security of Unix, could make it a viable alternative to PC-based networks in certain situations, users and analysts said.

Easysell

"They were an easy sell here." said Jim Hogan, manager of information systems at Gambro Healthcare, Inc. in Lakewood, Colo., a maker of kidney dialysis machines. Gambro three years ago bought 50 Tektronix, Inc. NetStations with Windows emulation software to attach to its Hewlett-Packard Co. HP-UX servers.

Desktop dilemma

PROS

Architecturally neutral

Inexpensive

Highly scalable

Zero client administration

No upgrade requirements Better security

Users don't want to give up control of their desktops

> Lack of stability of running Windows applications

we had opted to buy PCs for all of our engineers, it would have cost \$1.5 million," Hogan said. It also resulted in a "drastic timesavings" for Hogan and his network administrators because they had to configure only one server.

Greg Blatnick, vice president at Zona Research, Inc. in Redwood City, Calif., said Hogan's experience is typical.

"Unix vendors are making a very legitimate case. A thin client The total cost was \$150,000. If on the desktop eliminates the

need to upgrade systems with ever-burgeoning amounts of memory and storage capacity, which can get very expensive in large environments," he said.

Some large organizations, including Federal Express Corp., R. R. Donnelly & Sons Publishing Corp., Wells Fargo Bank, Bank of America and the University of Washington Medical Center, have either already adopted network computers with their Unix servers or are testing them with an eve toward deployment, Blatnick said.

Tom Boos, senior computing vice president at R. R. Donnelly in Chicago,

said the firm is building a thinclient, Java-based network that provides "portability across Windows, Macintosh and OS/2 workstations and applications.

"We're definitely considering it for some of our sites, though we haven't made a definite commitment yet," said an MIS manager at Federal Express in New York, who requested anonymity. "We have tens of thousands of users, and everyone is screaming for Internet access, which means we have to upgrade all our desktops. We'd be crazy not to at least look

Other users were hesitant. Rob Young, a software engineer at Vu/Text Library Services, Inc. in Philadelphia, said network computers require much higher network handwidth Otherwise "the network becomes the bottleneck," he said.

"So instead of paying to maintain PCs, you end up paying through the nose to keep the network running," Young said.

Save the servers

James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H., said users who exchange their fat desktop PCs for thin clients still need fat Unix servers to carry the application load.

Still. Garden and Blatnick said the de-

mand for Internet access could help spur the adoption of thin clients. "The Web is becoming the cross-platform application delivery and access vehicle, especially in legacy environments. Businesses could build Web interfaces on top of these applications. This would let users access legacy applications via Web browsers using PCs, laptops and thin clients. This trend will certainly support the push toward thin clients," Garden

The biggest barrier facing the thin clients, though, could come from end users. "It's going to be a tough sell convincing users to give up the freedom to control their desktops after so many years," Blatnick said.

Corrections

Due to an editing error, the story "Browser rouser" [CW, Aug. 26, page 1] incorrectly stated that Intuit, Inc. lost an antitrust suit against Microsoft Corp. Rather, Microsoft called off its proposed \$2 billion acquisition of Intuit in May 1995 in the face of what could have been a lengthy antitrust trial with the U.S. Department of Justice.

Due to a reporting error, a story on page 28 of Computerworld's Sept. 16 issue about System/390 hardware and storage subsystems misstated the capacity available in Ramac 3 disk arrays. It is actually 363G bytes.

A story on page 8 of Computerworld's Sept. 23 issue misstated the outsourcing relationship between Prudential Insurance Company of America and Integrated Systems Solutions Corp. (ISSC). ISSC will maintain the mainframe legacy applications now managed by Prudential's application development offices. Prudential will continue to run its data centers.

By Patrick Dryden and Kim Girard

Frustrated users of frame-relay services are driving carriers to improve the thoroughness and timeliness of reports about these vital links among remote sites.

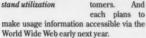
The packet-switching technology provides a cost-effective way to carry diverse traffic across wide-area networks through its speed, reduced overhead and flexible subscription levels

But many users complain they can't tell from the limited or late information provided by carriers if they are paying for the appropriate level of service and provisioning circuits according to users' needs.

Savvy users have sought their own monitoring tools so they wouldn't have to negotiate for additional chunks of frame-relay

capacity blindly and painfully as their WAN traffic fluctuates.

AT&T Corp., MCI Communications Corp. and Sprint Corp. told Computerthey world are evaluating whether adopt such tools to expand the information they provide to cus-And tomers.



Mercer Management's

Patrick Brennen says in-

dependent monitoring

tools help him under-

They finally recognized how these tools can help them monitor their service and be more responsive to customers," said Scott Meyers, network operations manager at Cargill, Inc. in Minneapolis.

The agricultural supplier adopted tools for real-time monitoring of its global links. Instead of receiving reports after the fact, Meyers wants to troubleshoot connection problems while on the telephone with remote sites. And he needs more complete statistics than those carriers provide.

"This helps me police the carriers," Meyers said. "Now I can make sure AT&T and MCI truly deliver the contracted service."

Another watchdog is Buck Consultants, Inc. The New York-based benefits consulting firm discovered it had paid for a committed information rate but received less capacity, said Clem Bowen, systems programmer at the firm.

To augment weekly reports from AT&T, Bowen scans circuit usage with more informative tools. He said he looks forward to the day when carriers provide "dynamic information on circuit usage that I don't have to download and print."

No carrier has provided adequate information on actual usage, said Tom Reinsel, telecommunications analyst at Eli Lilly and Co. in Indianapolis

"We must have a reality check when we purchase lines to know if we're getting our

Independent monitoring tools "help me understand utilization in ways that I couldn't get from the carrier," said Patrick Brennen, network operations manager at

Mercer Management Consulting, Inc. in New York.

Reinsel said he can control costs by detecting underutilized circuits. And when rolling out new applications, he said, he

needs to watch for overutilization, which can drag down response time for users.

Carriers say there is high demand for better and faster reporting on utilization. But they aren't sure if users will pay for reports or tolerate impact on service.



Users maneuver to open WAN bottlenecks. See page 63.



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commerce

and Mitch Wagner

Oracle Corp. this week is slated to announce an electronic commerce server, and it plans to Webenable its full line of client/server applications.

Oracle's merchant server. code-named Project Apollo, will let companies tap the Internet to sell goods, information and services. It is supported by several Internet application vendors that are developing plug-in modules that use Oracle's "cartridge" tech-

Sources said those vendors in-

linking its electronic-payment software to the Oracle merchant

Millipore Corp., a Bedford, Mass., maker of liquid and gas filtration equipment, plans to use Oracle's technology to let its customers get informa-

tion - and eventually transact business - via the Internet. Kevin Danehy, manager of

workgroup computing at Millipore, said Oracle has developed some "rather savvy applications" that will open up the company's price, availability and shipmentwho have World Wide Web

"We want to give our customers the ability to do simplistic things

themselves and take that burden off of our sales force," Danehy said. After an initial test period, Millipore may

take advantage of Oracle's orderentry capabilities that use a dragand-drop shopping cart interface. he said.

Oracle last week declined to comment on the upcoming announcement

Industry sources said Project

expected to support Oracle's WebServer software with Oracle7 as the back-end database. The merchant server works with Oracle's object-based Network Computing Architecture for connecting clients to distributed servers

and databases, the sources said. Front-end capability

Meanwhile, Oracle also will announce plans to open up its application suite to access from Javaenabled Web browsers. Any browser-equipped device, including network computers, intelligent telephones and handheld de-

vices, will be able to function as an Oracle front end company officials said.

The merchant server will put Oracle in heavy competition with Microsoft Corp., Netscape Communications Corp., IBM and other vendors that have already laid out their electronic commerce

But industry observers said Oracle's database technology and market dominance should hold it in good stead.

'Oracle is fairly well ahead of the game in understanding what the issues are that customers will face as they try to put un electronic commerce sites.' said Ted Julian, an analyst at International Data Corp. in Framingham. Mass.

Web-hosting services expand

By Mitch Wagner

Looking for a friendly big buddy to help you cross the information highway?

A couple of big companies auditioned for the role last week

Federal Express Corp. said it will offer electronic commerce services to help its customers sell products that FedEx will then also

Earlier, AT&T Corp. announced plans to expand its hosting service on the World Wide Web with built-in technology to accept credit-card payments and enhanced ties to companies' legacy electronic-mail systems.

AT&T and FedEx are among a busload of major vendors that offer electronic commerce services for Internet-hungry users.

For example, IBM recently announced Web-hosting services, including payment processing. And MCI Communications Corp. announced a similar program in the spring.

Teaming up with a corporate megalith has its advantages over going it alone or working with a smaller vendor, said Chris Pizey, webmaster at Universal Press Syndicate in Kansas City, Mo. Universal Press uses MCI to host its Web site (www.uexpress.com).

Big advantages

A big vendor can offer access to services, technology and highbandwidth connections that a smaller vendor would have difficulty matching. "Being part of a bigger picture has been better for us," Pizey said.

The FedEx offer may solve some of the major problems con-

sumer companies have had getting on the Internet - problems that have nothing to do with tech-

Many retail companies that depend on brick-and-mortar stores don't have a fulfillment system to take orders remotely and then ship a product to a customer. Catalog companies on the Web, such as Lands' End, Inc., don't face that problem.

FedEx will set up a company's Web catalog and run it on a Web server located at FedEx headquarters in Memphis. The company will also handle shipments - either by maintaining an inventory of items at a FedEx warehouse or by linking to a server that FedEx will install at the corporate customer's warehouses. The FedEx server will address and print out a shipping label for the corporate customer.

The FedEx service is scheduled to be available in the first half of next year. Pricing hasn't been determined, although FedEx officials said the company probably won't charge a monthly service fee, just a setup cost and a percentage of sales royalties.

AT&T expands digital cellular phone service. See page 66.

Online guarantees

Other electronic commerce service announcements

- A Web site hosting service offering payment processing.
- Cost: \$500 to \$5,000 per month.
- Never-miss-an-order cash-back guarantee to corporate
- Consumers will be indemnified against fraud that occurs at an AT&T site while using the AT&T Universal credit card

America Online

■ Will indemnify consumers for the complete amount of any fraud that occurs as a result of using any credit card on an AOL site, in cases where the card issuer doesn't cover the fraud itself.

Lucent broadens reach with Agile acquisition

By Kim Girard

Lucent Technologies, Inc., with its pending acquisition of LAN switch maker Agile Networks. Inc., aims to shed its image as a private branch exchange supplier

for that of a one-stop networking

For customers, the deal, expected to close tomorrow, brings a big contender closer to offering end-to-end voice and data networks. But some users question

At a glance

Lucent is expected to acquire Agile Networks for roughly \$100 million, according to one analyst

COMPANY	TECHNOLOGY	NUMBER OF EMPLOYEES	REVENUE
Lucent Murray Hill, N.J.	Voice PBX supplier	125,000	\$5.3 billion in Q2 1996
Agile Networks Boxboro, Mass.	LAN switch maker	60	\$7 million in fiscal 1995

whether the AT&T Corp. spin-off is nimble enough to compete in a rough-and-tumble market.

Lucent first moved in July to boost its profile as a network provider by signing an agreement under which it would resell equipment from Bay Networks, Inc. Lucent uses Bay's routing software in its own products and resells its switching and network management software.

Wally Knapp, director of computer services at Catonsville College in Catonsville, Md., said he was skeptical about Lucent's prospects as a full-service vendor.

Lucent "tried it all before" as a part of AT&T with NCR Corp. computers and Paradyne networking gear, said Knapp, a Bay Networks user. "Simply because they have the wires and boxes doesn't mean anything at all," he

Lucent is buying Agile, a privately held LAN switch maker in Boxboro, Mass., that has 60 employees, for its virtual LAN (VLAN) software and Asynchronous Transfer Mode technology. said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington.

VLAN technology lets information systems managers create logical workgroups regardless of where users are located on a network. Lucent officials said the firm plans to integrate Agile's VLAN technology across its product line and use Agile network management software with its OneVision management system.

But there is some overlap between the Agile products that Lucent is acquiring and those that Lucent resells from Bay Networks, notably Bay's larger switches.

Bay Networks answers 3Com Ethernet switch offering. See



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Apple readies PDAs, PowerBooks

By Lisa Picarille

Apple Computer, Inc. hopes that forthcoming personal digital assistants (PDA) and a revamped line of PowerBooks will reverse

the company's dwindling share in the portable computer market.

Apple this month is expected to release two long-awaited additions to its Power-Book family and products from its newly formed Information Appliance Division.

"We've been waiting too long for new PowerBooks," said Mike Bailey, a systems analyst at Lockheed Martin Missiles & Space in Sunnyvale, Calif., a division of Lockheed Martin Corp. "Apple used to be a leader in PowerBooks and portables, and now they are a follower. But if they can really deliver what they've promised with these PowerBooks and keep up with demand, then that should also help to restore faith in the company."

Apple has fallen from fourth to ninth in laptop sales, according to second-quarter figures from International Data Corp. in Framingham, Mass.

Apple's lower-end PowerBook, codenamed Epic, will be the Cupertino, Calif., computer maker's first portable equipped with a CD-ROM drive. It will run on a 117-MHz PowerPC 603E chip, which is upgradable ICW, Aug. 261.

The Epic line, expected to cost \$2,000 to \$3,500, was originally slated to be delivered in July.

On the high end is a PowerBook line code-named Hooper. The Peripheral Component Interconnect-based laptop will also use the PowerPC 603E chip, but it will run at 180 or 200 MHz with an optional Level 2 cache and a 12-in, screen.

MOST MID-SIZED COMPANIES HAVE AN UNUSUAL APPROACH TO DESIGNING THEIR INFORMATION SYSTEMS.

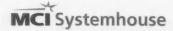


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Apple's fall harvest

EPIC CD

- irst PowerBook to have a CD-ROM trive
- 117-MHz PowerPC 603E chip
- Price: \$2,000 to \$3,500

HOOPER

- 180- and 200-MHz PowerPC 603E
- Level 2 cache
- 12-in. screen
- · Lithium ion batteries
- Price: \$4,500 to \$6,500

INFORMATION APPLIANCE PDAS

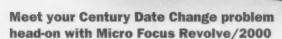
- StongARM RISC processor
- Weigh about 1 pound
- 9-in. monochrome display
- Use four AA batteries
- Price: \$700 to \$1,000

For Hooper, Apple has opted for lithium ion batteries. That kind of battery caused some of Apple's PowerBook 5300 models to overheat and catch on fire, prompting the company to recall the 5300 last fall. The Hooper line is expected to cost \$4,500 to \$6,500.

The laptop families will ship with either dual-scan or active-matrix color displays.

Apple also plans later this month to unleash the first wave of products from its Information Appliance Division, which was formed as part of the restructuring plan announced by Chairman and CEO Gilbert F. Amelio in May.

The new portable devices will include a World Wide Web browser and software bundles aimed at specific markets, including education, medical and mobile professionals.



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Using the Internet for project management

By Bob Wallace

If you had the ambitious job of wiring 1,554 far-flung sites to the Internet, what would you do? How about using the Internet itself as a project management tool.

That's what Al Ganier and company decided to do when presented with the gargantuan task of connecting 1,554 schools in 95 Tennessee counties to the Internet across Integrated Services Digital Network (ISDN) lines.

When completed in six to eight weeks, the \$5.6 million ConnecTen program will provide \$60,000 students and their teachers access to the Internet's vast

In control

now set policies for how they want mobile workers and branch offices to access resources at central sites, thanks to an innovative package introduced last week by Cabletron Systems. Inc.

SecureFast VRA Manager runs on a Microsoft Corp. Windows NT server and lets administrators set up security, management, connection configuration. accounting and reporting rules across multiple Cabletron CyberSwitch central site remote access servers. The rules can keep the servers from accepting calls during specific times of the day or days of the week. Used with call accounting data, the rules can help IS managers save on wide-area network charges.

"Cabletron is the first internetworking vendor to extend the policy benefits of campus networks to the growing remote access community," said John Morency, a principal at The Registry, Inc., a Newton, Mass., consulting and research firm. "Once the remote user gets approved by VRA Manager, he or she can rock 'n' roll across the campus network."

-Bob Wallace

educational resources.

The project's logistics entailed configuring routers for each school, coordinating ISDN line provision and equipment installation among 27 telephone companies and creating an information-packed World Wide Web page to keep everyone abreast of the project's status.

"We exchanged the files we needed to establish and verify routing tables for all the schools' remote access routers with Cabletron [Systems, Inc.] over the 'net,' Ganier explained. He is president of Connect Tennessee Students, a nonprofit group in Nashville that runs the Connec-Ten project.

"There was almost no paper involved, which meant the process was more efficient and far less time-consuming," Ganier said.

The Web page also enabled schools to check on the Internet — rather than flood his network operating center with hundreds of telephone calls — for available IP addresses and the installation dates for every school.

Industry analysts said they were impressed with Ganier's approach to project management.

ConnecTen "is breaking new ground in project management, which is by far the toughest and most demanding aspect of any network undertaking," said Daniel Briere, president of Tele-Choice, Inc., a consultancy in Verona, N.J.

ConnecT	en stats
/ Initial project	\$5.6 million
Number of schools involved:	1,554
Countles covered:	95
Students with Internet access:	860,000
Types of PCs and LANs linked:	Macintosh and Novell NetWare LANs
Browser:	Navigator 2.0
Number of preset bookmarks:	250
Number of teachers needed to load browsers:	2,000
Teacher training facilities:	8
Number of tele- phone companies:	27

StorageTek users still jittery

Mainframe storage customers worry about IBM's plans

By Tim Ouellette
ALBUQUERQUE, N.M

Data center managers attending last week's Storage Technology Corp. conference here just wanted to know who is minding the store.

Users had questions about a June agreement that gives mainframe storage competitor IBM sole responsibility for sales and marketing of Storage-Tek's line of mainframe disk arrays [CW, June 17].

"We had mixed feelings because everything coming from one vendor cal limit competition, which has been good for us in the past with lower prices," said Dan Stanton, director of information processing services operations at MCA, Inc. in Universal City, Calif.

Attendees said they don't want prices of mainframe disk storage to go up with one fewer vendor in the mix, and they wonder about IBM's commitment to marketing the Storage-Tek products while still selling its own Ramac systems. Also, users don't know who will provide product support and maintenance now that there is a mix of old StorageTek shops, StorageTek shops getting upgrades from IBM and new IBM customers.

With StorageTek's removal, remaining rivals to IBM include EMC Corp. and Hitachi Data Systems Corp. Although there is one fewer player, disk array Melting iceberg

Now that StorageTek's Iceberg is part of IBM's Ramac line, IBM is adding its own new features, including:

- IBM 4.5G-byte disk drives
- Optional array configurations, including 8 disks for 80G bytes or 16 disks for 210G bytes
- Smaller footprint
- Integrated packaging with other IBM products

prices have declined over the past year and users expect good things from IBM enhancements to StorageTek products (see chart).

"IBM and StorageTek have both served us extremely well, and we hope it continues" with this agreement, said Tom Birk, manager of the Environmental Protection Agency's National Computer Center in Raleigh, N.C.

In the cards

IBM and StorageTek officials revealed the following:

- IBM will handle maintenance for new installations and upgrades to StorageTek's Iceberg disk arrays, while StorageTek will continue maintenance for existing Iceberg customers.
- If the agreement isn't renewed in 1999, customers who bought or upgraded systems

from IBM will still receive support from IBM.

• IBM will continue to work on its Seastar project, its next-generation, fault-tolerant disk storage technology that isn't expected to be released until 1998. Seastar won't compete directly with Iceberg but will target higher-end users.

• There is no plan to expand the agreement to other product lines, specifically tape-storage systems.

• IBM is committed to sell a minimum number of Storage-Tek systems, and Storage Tek has committed to certain target dates for new development on the products.

Paul O'Neil, vice president of IBM's high-end storage business, said getting the right information from IBM staff to users is IBM's highest priority.

"We've been cautious about putting too much future [Iceberg] product information in IBM [marketing's] hands right away," O'Neil said.

Louisville, Colo.-based StorageTek entered into the deal with IBM because it felt its smaller sales force could not properly market its line of disk products. Sales in the high-end disk storage market are projected to hit \$6.1 billion in 1996, according to International Data Corp. in Framingham, Mass.

IBM unveils storage copy feature in Ramac Virtual Array. See page 41.

StorageTek plans management software

tool being developed by StorageTek may soon give users a better picture of how to store their corporate data.

MetaLabel software will manage indexes of data on tape storage systems to make it easier to find data and understand where and how it's stored. Another tool being prepared, Virtual Storage Manager, simplifies the way data is organized among storage volumes in tape cartridge libraries.

The firm also plans to let its

Central Archive Management (CAM) software provide backup data from LANs to Unix systems. Currently, CAM backs up only LAN data to mainframe storage. Such products may give users more options in the way they handle data coming into their central storage and backup systems.

"This reflects a trend in the market to move into storage management, not just storage of data," said Ray Freeman, president of storage consultancy Freeman Associates, Inc. in Santa Barbara, Calif.

MetaLabel builds on the concept of managing meta-data. Users can get an integrated picture of the medium on which the data is stored and content, usage and relationships between data sets in their networked storage system. The information can be used to better distribute data to various types of tape storage and ensure that data can be placed in the most secure storage media based on its importance.

- Tim Ouellette



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ActiveX gets a boost

Windows 3.1, Unix versions of Explorer to support technology

By Frank Hayes

Continuing its push to make ActiveX an Internet standard, Microsoft Corp. last week said it will support the component technology in the Windows 3.1 and Unix

versions of Internet Explorer, its World Wide Web browser.

Microsoft Chairman and CEO Bill Gates

demonstrated an early version of Internet Explorer 3.0 for Unix at last week's Unix Expo Plus trade show in New York.

The company also announced that upgraded versions for Windows 3.1, Unix and Macintosh that support ActiveX will be available free by year's end.

"We like what we see of Active-X, and the fact that it's on platforms other than Windows 95 will give us more flexibility," said Wayne Lemmerhirt, manager of technology services at Boston Edison Co., where the standard desktop runs Windows 3.1.

ActiveX, Microsoft's software-

component technology, is built in to Windows 3.1, Windows 95 and Windows NT.

Earlier this month, Microsoft announced it had formed a consortium of software vendors called The Active Group to license

Active Group to license ActiveX for other platforms, such as Unix. ActiveX is a revamped version of Microsoft's OLE 2.0 technology, which is

included in Windows 3.1.

Java alternative

Internet

standards

Microsoft also has put forward ActiveX as a way to embed small programs into Web pages. ActiveX components would be an alternative to Java applets, the small programs written in Sun Microsystems, Inc.'s cross-platform Internet language.

Currently, neither ActiveX nor Java is supported in Web browsers that run on Windows 3.1, which is still widely used on business desktops.

"There are certainly more Windows 3.1 clients than there are Ap-

ple [Computer, Inc.] or Sun [clients] combined," said Paul Mahowald, vice president of information systems at Blockbuster Entertainment, a division of Viacom International, Inc. in Fort Lauderdale, Fla. "Having Java applets available on Windows 3.1 will be very useful."

IBM and Netscape Communications Corp. are developing Java support for Windows 3.1. Netscape plans to release a Javaenabled version of its Navigator 3.0 browser for Windows 3.1 this month.

Neither ActiveX nor Java is supported in the beta version of Internet Explorer 3.0 for Windows 3.1 that Microsoft made available at its Web site this week. Those features will be added before the product ships at year's end, company officials said. Still, as corporate developers begin to build client/server applications that use Web browsers and run across corporate intranets, users like having a second option for a fulfeatured browser, observers said.



IBM's RS/6000 upgrade announcement included the following systems:



43P MODEL 140
Processor: 166-MHz or 200-MHz PowerPC 604E
Graphics: PCI
Starting Price: \$10,800

43P MODEL 240

Processor: Up to two
166-MHz PowerPC 604E

Ports: Dual PCI buses and

Starting Price: \$20,000

IBM plays catch-up in Unix server space

Biggest overhaul in six years will add price and performance improvements

By Jaikumar Vijayan

IBM last week introduced new systems, processors, clustering capabilities and broader Internet support in a wide-ranging refresh of its RS/6000 line of Unix work-stations and servers.

The announcements include new PowerPC 604E-based workstations and servers; a dual-processor technical workstation that costs less than \$20,000; more World Wide Web software options; and a disaster-recovery capability for long-distance remote backup.

This marks the biggest overhaul of the popular lineup since it was launched six years ago. It brings IBM users some longawaited technology and performance enhancements.

The lineup gives users "a broader system range with new processors at the low end and the high end and significantly better performance at the same price points," said Peter Lowber, an analyst at Datapro Information Services Group in Delran, N.J.

Catchingup

The announcements also help IBM close a dangerously widening price and performance gap between its RS/6000 systems and those from vendors such as Hewlett-Packard Co., Sun Microsystems, Inc. and Silicon Graphics, Inc., analysts said.

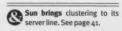
"They are finally getting out what they said they were going to for the past year. They are just playing catch-up," said Roy Dodd, MIS director at The Good Guys, Inc., an electronics retailer in Brisbane, Calif.

But "this definitely gets IBM back in the mainstream and puts them in a good position with systems from vendors like HP and SGI," said Thomas Copeland, an analyst at International Data Corp. in Framingham, Mass.

New agenda

The highlights of IBM's announcement included the following:

- The introduction of 166- and 200-MHz PowerPC 604E uni- and dual-processor workstations and servers.
- Peripheral Component Interconnect-based graphics support.
 That means users will have a much larger choice of graphics components compared with IBM's proprietary Micro Channel Architecture-based graphics environment.
- A supercomputer and a deskside system based on IBM's highend Power2 Super Chip.
- Electronic commerce software, Lotus Notes 4.5 and Java-based software options with IBM's Powersoft integrated Internet bundle.
- A high-storage capacity symmetrical multiprocessing server that supports up to 81.9G bytes of internal RAID storage, up to 1G byte of memory and up to 22 bays and nine expansion slots.



Users still bugged by Explorer 3.0

By Kim S. Nash

Microsoft Corp. last week released a beta-test edition of Internet Explorer 3.0 for Windows 3.1, but some users wonder whether it will have the same problems found in the Windows 95 version of the browser that shipped in Au-

Some problems have been fixed, but several users are vexed by the bugs that remain.

Internet Explorer 3.0 scored high marks over rival Netscape Navigator 3.0 for look and feel and some advanced capabilities. But the product has been far from trouble-free, users said.

Several past problems

On its World Wide Web site, Microsoft lists 12 "known issues" with Internet Explorer 3.0 (see chart), but users said they have discovered many more.

For example, errors related to the Wininet runtime library frequently crop up, including systems crashes and the inability to get Internet Explorer running after such a crash, according to complaints on Microsoft and Usenet newsgroups.

Internet Explorer support engi-

PROBLEM SOLUTION Internet Explorer 3.0 Microsoft is researching the won't run when Trumpet problem: it is telling users to WinSock Point-to-Point remove Trumpet WinSock Protocol is installed Screen flashes or flickers Change code in registry, then Some browser plug-ins Some add-ons require that Navigator also be installed; Microsoft is working with plugin makers to tweak their products for Explorer or build similar ActiveX components

neers who monitor the newsgroups said they know about the error but haven't devised a fix.

Some users feared that Microsoft — in its race to compete with Netscape Communications Corp. — simply rushed Internet Explorer 3.0 out before its time.

"Microsoft was not ready for the program to ship when it did," said Kevin Thomas, president of MetroPage, a pager and cellular telephone company in Atlanta. "I am not completely satisfied."

Other users agreed. One user, who asked to remain anonymous, said he suffers regular, unexplained "total system lockups" that force him to reboot his PC. "This is very serious," he said.

Microsoft didn't return calls last week requesting comments about the remaining bugs. The company did fix some bugs in Internet Explorer 3.0 for Windows 95 just after the browser shipped.

Users to Netscape: Keep your promises

By Kim S. Nash

Netscape will offer a ton of product promises and road maps - maybe even a bridge to the 21st century - at its user conference this week in New York. But users will ask the World Wide Web software vendor when it will fulfill some of its previous campaign promises

At the top of the list is when Netscape Communications Corp. will integrate the groupware products it garnered in a \$108 million buyout of Collabra Software, Inc. 13 months ago.

At the user conference this week, Netscape is expected to answer estions about norting its electronic comrce Web servers -Publishing, Merchant and Community -- to databases other than Oracle's Informix versions were slated to p this quarter or ear ght be pushed back to early next year.

soft agreed to support Sun Microsystems, Inc.'s rival Java programming language, but Netscape officials have said they have no similar plans for ActiveX.

developers at large user sites who want to run both Netscape and Microsoft browsers, said an information systems manager

That may cause trouble for application at a large retailer, who requested anonymity. "Netscape is going to have to embrace ActiveX and not rely on a third-party, halfbaked plug-in," the manager said.

Getting beyond Oracle

Netscape said that by the middle of this year Navigator browser would let users access shared Collabra files. But support for Collabra has been delaved until Navigator 4.0 ships, which is expected in early 1997. "We now have to wait for Net-

At the time

scape to drive the direction of a product that we were all set to

take off with," said Geoffrey Teekema, a project manager at Boston Scientific Corp.

The Natick, Mass.-based medical instruments maker bought a 2,000-user license from Collabra before Netscape acquired the company.

Some of the delay in Collabra support stems from Netscape's ripping out Collabra's proprietary groupware technology to replace it with a work-sharing system based on the Net News Transport Protocol (NNTP) standard. NNTP is used in Usenet newsgroups, for example,

But Netscape will give showgoers a peek at Navigator 4.0, including a look at its Tools menu, which will contain Collabrarelated commands [CW, Oct. 7].

On the way

Also on tap for the conference are the following:

- · How-to sessions on using Lightweight Directory Access Protocol services to track intranet users' rights and permissions.
- · Previews of upgrades to the SuiteSpot line of Web servers, which are due in the first half of next year.
- · Previews of legacy access utilities that will link intranets to existing systems and hack-end databases

Some users are grumbling about Netscape's snub of Microsoft Corp.'s ActiveX Internet development technology. Micro-

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Canadian firm uses Internet to speed stock market research. See page 73.

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Currently, neither ActiveX nor Java is supported in Web browsers that run on Windows 3.1, which is still widely used on business desktons.

"There are certainly more Windows 3.1 clients than there are Apple [Computer, Inc.] or Sun [clients] combined," said Paul Mahowald, vice president of information systems at Blockbuster Entertainment, a division of Viacom International, Inc. in Fort Lauderdale, Fla. "Having Java applets available on Windows 3.1 will be very useful."

IBM and Netscape Communications Corp. are developing Java support for Windows 3.1. Netscape plans to release a Javaenabled version of its Navigator 3.0 browser for Windows 3.1 this month

Neither ActiveX nor Java is supported in the beta version of Internet Explorer 3.0 for Windows 3.1 that Microsoft made available at its Web site this week. Those features will be added before the product ships at year's end, company officials said. Still, as corporate developers begin to build client/server applications that use Web browsers and run across corporate intranets, users like having a second option for a full-featured browser, observers said.

Server samplings

IBM's RS/6000 upgrade announcement included the following systems:



43P MODEL 140

Processor: 166-MHz or 200-MHz PowerPC 604E Graphics: PCI

Starting Price: \$10,800

43P MODEL 240

Processor: Up to two
166-MHz PowerPC 604E

Ports: Dual PCI buses and
PCI graphics

Starting Price: \$20,000

IBM plays catch-up in Unix server space

Biggest overhaul in six years will add price and performance improvements

By Jaikumar Vijayan

IBM last week introduced new systems, processors, clustering capabilities and broader Internet support in a wide-ranging refresh of its RS/6000 line of Unix workstations and servers.

The announcements include new PowerPC 604E-based workstations and servers; a dual-processor technical workstation that costs less than \$20,000; more World Wide Web software options; and a disaster-recovery capability for long-distance remote backup.

This marks the biggest overhaul of the popular lineup since it was launched six years ago. It brings IBM users some longawaited technology and performance enhancements.

The lineup gives users "a broader system range with new processors at the low end and the high end and significantly better performance at the same price points," said Peter Lowber, an analyst at Datapro Information Services Group in Delran, N.J.

Catchingup

The announcements also help IBM close a dangerously widening price and performance gap between its RS/6000 systems and those from vendors such as Hewlett-Packard Co., Sun Microsystems, Inc. and Silicon Graphics, Inc., analysts said.

"They are finally getting out what they said they were going to for the past year. They are just playing catch-up," said Roy Dodd, MIS director at The Good Guys, Inc., an electronics retailer in Brisbane Calif.

But "this definitely gets IBM back in the mainstream and puts them in a good position with systems from vendors like HP and SGI," said Thomas Copeland, an analyst at International Data Coro, in Framingham, Mass.

New agenda

The highlights of IBM's announcement included the following:

- The introduction of 166- and 200-MHz PowerPC 604E uni- and dual-processor workstations and servers.
- Peripheral Component Interconnect-based graphics support. That means users will have a much larger choice of graphics components compared with IBM's proprietary Micro Channel Architecture-based graphics environment.
- A supercomputer and a deskside system based on IBM's highend Power2 Super Chip.
- Electronic commerce software, Lotus Notes 4.5 and Java-based software options with IBM's Powersoft integrated Internet bundle.
- A high-storage capacity symmetrical multiprocessing server that supports up to 81.9G bytes of internal RAID storage, up to 1G byte of memory and up to 22 bays and nine expansion slots.

Sun brings clustering to its server line. See page 41.

Users still bugged by Explorer 3.0

By Kim S. Nash

Microsoft Corp. last week released a beta-test edition of Internet Explorer 3.0 for Windows 3.1, but some users wonder whether it will have the same problems found in the Windows 95 version of the browser that shipped in Au-

Some problems have been fixed, but several users are vexed by the bugs that remain.

Internet Explorer 3.0 scored high marks over rival Netscape Navigator 3.0 for look and feel and some advanced capabilities. But the product has been far from trouble-free users said.

Several past problems

On its World Wide Web site, Microsoft lists 12 "known issues" with Internet Explorer 3.0 (see chart), but users said they have discovered many more.

For example, errors related to the Wininet runtime library frequently crop up, including systems crashes and the inability to get Internet Explorer running after such a crash, according to complaints on Microsoft and Usenet newsgroups.

Internet Explorer support engi-

The fi

Microsoft's Web site (www.microsoft.com/iesupport/content/issues/) lists Internet Explorer bugs and resolutions. They include the following:

PROBLE

Internet Explorer 3.0 won't run when Trumpet WinSock Point-to-Point Protocol is installed

Screen flashes or flickers

Some browser plug-ins

SOLUTION

Microsoft is researching the problem; it is telling users to

Change code in registry, then reinstall browser

remove Trumpet WinSock

Some add-ons require that Navigator also be installed; Microsoft is working with plugin makers to tweak their products for Explorer or build similar ActiveX components

neers who monitor the newsgroups said they know about the error but haven't devised a fix.

Some users feared that Microsoft — in its race to compete with Netscape Communications Corp. — simply rushed Internet Explorer 3.0 out before its time.

"Microsoft was not ready for the program to ship when it did," said Kevin Thomas, president of MetroPage, a pager and cellular telephone company in Atlanta. "I am not completely satisfied."

Other users agreed. One user, who asked to remain anonymous, said he suffers regular, unexplained "total system lockups" that force him to reboot his PC. "This is very serious," he said.

Microsoft didn't return calls last week requesting comments about the remaining bugs. The company did fix some bugs in Internet Explorer 3.0 for Windows 95 just after the browser shipped.

Users to Netscape: Keep your promises

By Kim S. Nash

Netscape will offer a ton of product promises and road maps - maybe even a bridge to the 21st century - at its user conference this week in New York. But users will ask the World Wide Web software vendor when it will fulfill some of its previous campaign

At the top of the list is when Netscape Communications Corp. will integrate the groupware products it garnered in a \$108 million buyout of Collabra Software, Inc. 13

beyond Oracle

At the user conference this week, Netscape is expected to answer questions about porting its electronic commerce Web servers -Publishing, Merchant and Community - to databases other than Oracle's, Informix versions were slated to ship this quarter or early next quarter but might be pushed back to early next year.

months ago At the time. Netscape said that by the middle of this year Navigator browser would let users access shared Collabra files. But support for Collabra has been delayed until Navigator 4.0 ships,

"We now have to wait for Netscape to drive the direction of a product that we were all set to

which is expect-

ed in early 1997.

take off with," said Geoffrey Teekema, a project manager at Boston Scientific Corp.

The Natick, Mass.-based medical instruments maker bought a 2,000-user license from Collabra before Netscape acquired the company.

Some of the delay in Collabra support stems from Netscape's ripping out Collabra's proprietary groupware technology to replace it with a work-sharing system based on the Net News Transport Protocol (NNTP) standard. NNTP is used in Usenet newsgroups, for example,

But Netscape will give showgoers a peek at Navigator 4.0, including a look at its Tools menu, which will contain Collabrarelated commands [CW, Oct. 7].

On the way

Also on tap for the conference are the following:

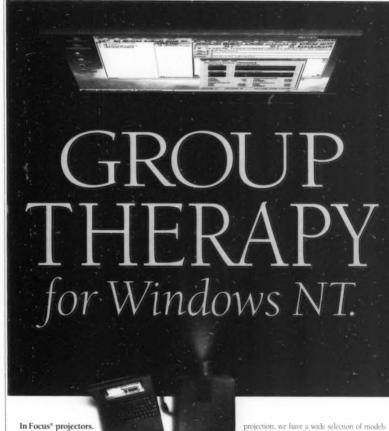
- · How-to sessions on using Lightweight Directory Access Protocol services to track intranet users' rights and permissions.
- · Previews of upgrades to the SuiteSpot line of Web servers, which are due in the first half of next year.
- · Previews of legacy access utilities that will link intranets to existing systems and back-end databases.

Some users are grumbling about Netscape's snub of Microsoft Corp.'s ActiveX Internet development technology, Micro-

soft agreed to support Sun Microsystems, Inc.'s rival Java programming language, but Netscape officials have said they have no similar plans for ActiveX.

That may cause trouble for application at a large retailer, who requested anonymdevelopers at large user sites who want to run both Netscape and Microsoft browsers, said an information systems manager

ity. "Netscape is going to have to embrace ActiveX and not rely on a third-party, halfbaked plug-in," the manager said.



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Canadian firm uses Internet to speed stock market research. See page 73.

Computer Industry

CA captures Cheyenne

Seeks lead in workgroup management

By Patrick Dryden and Matt Hamblen

In a bold bid to broaden its systems management reach into LANs, Computer Associates International, Inc. last week acquired Chevenne Software, Inc. for roughly \$1.2 billion.

CA seeks to extend its Unicenter systems management support further into workgroups by integrating Chevenne's popular LAN backup and virus protection tools and taking over its sales channels.

At stake is a market for enterprise systems management softvare that is projected to reach \$7 billion to \$10 billion by 1999. Also vying for a slice of that pie are vendors such as Tivoli Systems, Inc. and Hewlett-Packard Co. with their integrated platforms.

Industry analysts generally praised the move, but some users said they were worried about the

"CA's management suite will look more attractive with these products closely tied to the line but I'm concerned about their bad reputation for support," said Byron Jones, systems administrator at the University of Miami in Coral Gables, Fla. "They tend to buy companies for technology but then leave the products to die on the vine." Jones uses software from both vendors.

But CA pledged to break from tradition and keep all 800 Cheyenne employees in a division that will continue to support its distribution channel and users.

"This time they have a good fit because the product lines don't overlap," said Brian Burba, management analyst at International Data Corp. in Framingham, Mass. "CA lacks [Novell, Inc.] NetWare storage management support and expects to grow support for Windows NT better than Merging management

- Data management tools for workgroups, including ARCServe backup and InnocuLAN virus scanning software
- Staff of 800 with expertise in workgrouplevel software, support and sales
- Distribution channel to complement CA's direct sales force
- Partnerships for developing and spreading Unicenter tools

This way CA can grab a leadership position in workgroup storage management, taking a shortcut from the long and costly

development road to support LANs and desktops, said Sue Aldrich, an analyst at Patricia Seybold Group in Boston.

CA plans to integrate ARC-Serve software for backup and hierarchical storage management, along with the InnocuLAN virus scanner, into its Unicenter line, said Charles Wang, chairman and CEO of CA in Islandia, N.Y.

For users, that means Chey enne tools will gain an enterprisewide view, said ReiJane Huai, chairman and CEO of Chevenne in Roslyn Heights, N.Y.

Tough sell

But one potential user of CA's Unicenter systems management platform remains unswaved by the acquisition's promised bene-

"CA is focused on pushing the Unicenter next-generation version that integrates all aspects of systems and application management. But our consultants warn us that won't ship for another year," said a bank official, who requested anonymity. "We just told them to call again when they have a real product to show us.

Lotus CEO steps down

By Tim Ouellette

Lotus Development Corp. is losing another executive, but he isn't going very far.

CEO Michael Zisman is stepping down from his post for family reasons. But Zisman will remain as vice president of strategy at the Cambridge.

Mass., subsidiary IBM.

Chief Operating Officer leffrey Papows will take over as



Michael Zisman

Papows had shared the office of the president with Zisman, and both reported to John M. Thousason, senior vice president of IBM's Software Group, Because Zisman and Papows had complementary roles, observers don't expect much change in Lotus' strategy.

Lotus has suffered a slew of executive resignations since it was bought by IBM in June 1995. Zisman stepped in as CEO when former CEO Jim Manzi left last October.

had taken a smaller part in the operations of the company since this

Zisman

Jeffrey Papows

Expo summer. when he had to forgo a presentation on Lotus'

Domino technology due to a death in the family.

Zisman is a founder of Soft-Switch, Inc. in Wayne, Pa., which was bought by Lotus.

He is credited by observers with providing a strong technical vision for Lotus as it moved to improve its flagship Notes groupware.

"As a visionary for technology, he is probably one of the strongest people I have ever met," said Gary Rowe, principal at Rapport Communications, Inc. in Atlanta. "Lotus will miss him in that

Papows previously was president and CEO of Cognos Corp.

Internet providers sued for software piracy

By Stewart Deck

The Software Publishers Association (SPA) filed lawsuits late last week that charge two Internet service providers and a World Wide Web-hosting service with software piracy.

Sandra Sellers, vice president of intellectual property at the SPA, said the association

filed copyright infringement lawsuits against service providers Community ConneXion, Inc. in Oakland, Calif., and GeoCities, Inc. in Beverly Hills, Calif. Tripod, Inc., a Web-hosting service in Williamstown, Mass., also was served with legal papers last Thursday.

The SPA filed the suits on behalf of software manufacturers Adobe Systems, Inc., Claris Corp. and Traveling Software, Inc.

Four charges

The lawsuits allege that each of the three service providers allowed their users to infringe on software copyrights in one of four ways: by posting unauthorized

publishing illegal software authorizing serial numbers, publishing cracker/hacker utilities or letting users maintain links to file transfer protocol sites that host pirated software.

Sellers said the SPA sent each service provider a warning letter. Repre-**Legal issues** sentatives at two of

> the companies said it wasn't clear whether those letters had been received

Douglas Barnes, vice president of sales and marketing at Community ConneXion, was incensed by the association's heavy-handed tactics. "This is a groundless and frivolous lawsuit," he said. "They sent us an [electronic-mail] form letter Sept. 25, and a week later they served us with a lawsuit."

Barnes said monitoring everchanging Web pages for content is difficult. Instead of taking legal action, the association should work with service providers on copyright policing, he said.

Ironically, Community Conne Xion makes 95% of its revenue from sales of Web server and other software. Barnes said. "We were going to join the SPA before this happened. Now there's no way we will." he said

A spokesperson at Tripod said the company is "looking into the suit." GeoCities officials declined

Chris Stevens, an Internet analyst at Aberdeen Group, Inc. in Boston, agreed with Barnes. They need to go after the people who post pirated software, not the host. That's like suing the phone company for receiving obscene phone calls," he said.

Clinton pledges Internet funds

By Gary H. Anthes

President Clinton last week pledged \$100 million of federal money to kick off a five-year program to build "the next-generation Internet'

Clinton said the funds, which would come from existing government research programs, would be used in 1998 to connect at least 100 universities and federal laboratories at speeds 100 to 1,000 times faster than today's Internet.

An additional \$400 million would be used over the five years to promote experimentation with new networking technologies and demonstrate new applications in areas such as national defense, medicine, education and manufacturing. Clinton didn't say where those funds would come from.

"The results of this work will almost surely trigger serendipitous discoveries and unlock billions of dollars in corporate product/service development," said Vinton Cerf, vice president of data architecture at MCI Communications Corp. in Washington.

As co-developer of the Arpanet, the forerunner of the Internet, Cerf saw federal seed money in the 1970s and 1980s spawn much of today's network technology.

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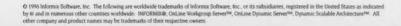
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PowerPC chip blows past Intel

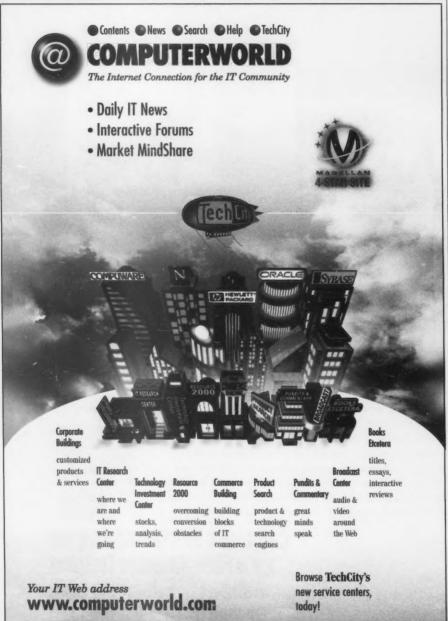
By Lisa Picarille

The PowerPC market will get a boost next week when Motorola, Inc. and IBM as well as start-up Exponential Technology, Inc. announce new PowerPC chips. The chips will be unveiled at the Microprocessor Forum conference in San Jose, Calif.

The biggest performance increase is expected to come from Exponential's X704

chip, a 500-MHz PowerPC chip. The San Jose, Calif., company, which boasts Apple Computer, Inc. as a financial supporter, is expected to begin shipping the chip in volume during the first quarter of 1997. Apple and Macintosh clone makers Power Computing Corp., Umax Computer Corp. and DayStar Digital, Inc. are prepping machines based on the 500-MHz chip. Most are due next summer, sources said.

Industry observers warned that there are roadblocks to achieving that increased speed — a huge leap in clock speed over the current crop of 225-MHz PowerPC chips. The X704 could be hampered by the current Macintosh bus architecture and cache configurations.



What a difference a year makes OCTOBER 1995 IBM ships 150-MHz PowerPC 604 chip MAY 1996 Motorola and IBM ship 200-MHz PowerPC 603E chip IBM ships 225-MHz PowerPC 604E chip Exponential expected to unvell 500-MHz PowerPC chip Motorola and IBM due to announce 240-MHz PowerPC 603E chip 1997 Exponential 500-MHz X704 chip slated to ship 300-MHz Ga chip 1999 Motorola and IBM expected to ship 300-MHz Ga chip 1999 Motorola and IBM expected to ship 300-MHz Ga chip

Still, users said they were excited by the potential performance increase.

"This is the leap [over Intel] that everyone has been waiting for," said Victor Nazarian, MIS director at Harbour Inn Convalescent Medical Center in Baltimore. "With double the clock speed, I would like to get my hands on the machines as soon as possible."

Mike Feibus, an analyst at Mercury Research in Scottsdale, Ariz., warned that clock speed alone isn't an accurate measure of how much faster the chip is. Still, 500 MHz tops anything available in the Intel Corp. and PowerPC markets.

"It'll be a while before Intel hits that level of performance," Feibus said. He said Intel's Pentium Pro is expected to reach speeds of 300 MHz by the end of next year.

Motorola and IBM also are expected to have a 500-MHz PowerPC chip, but not until 1999.

Exponential's first offering will take over as the high-end flagship PowerPC processor. That title was intended for the PowerPC 620 that Motorola and IBM are developing, but the 620 is more than a year late. No new delivery date has been announced.

In the meantime, Motorola and IBM will also take the wraps off their fastest PowerPC processor to date: a 603E that runs at 240 MHz. Two months ago, Power Computing announced a high-end system, the PowerTower 240, based on that chip. Apple is also readying 240-MHz 603E systems, sources close to the Cupertino, Calif., company said.

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UNIFACE WHAT THE BIG GUYS USE

Apple's turnaround efforts bear fruit

Cost cutting, restructuring, a decline in excess channel inventory and anticipated new products seem to have put Apple Computer, Inc. on the road to financial recovery. At least for the short term.

But concerns linger that unless Apple can stop its market-share erosion, recovery may hit a dead end.

Oct. 16, and Wall Street analysts predict that Apple's financials will be on the upswing in the next two quarters.

"Apple's return to profitability is forecast-

ed to occur in the March quarter next vear," said Eugene Glazer, an analyst at Dean Witter Reynolds in New York. "It's possible that could occur as early as the December quarter.

Historically, the buying frenzy of the Christmas season makes the last three months of the year Apple's most profitable. This year, the company hopes to entice holiday shoppers with new products across its PowerBook, Performa, Power Macintosh and Newton families.

Apple's financials \$60M \$3B Q4 1995 -\$69M Q1 1996 \$3.15B \$740M \$2.2B -\$32M \$2,17B Q3 1996

Glazer estimates that Apple's revenue will drop 23%. "On the revenue side, business is not good," he said. "They need to stop market-share erosion.

One analyst said Apple's sales and revenue may not be on the upswing, but there is a bright side.

"There hasn't been any share gain, but demand for Apple product is outpacing supply," said Vadim Zlotnikov, an analyst at Sanford C. Bernstein & Co. in New York. "From what I can tell, margins on the products they are selling are higher than [what are being garnered within] the overall PC market," he said. Zlotnikov predicted only a "slight loss in the fourth [calendar] quar-

Operating system

Although Macintosh clones may be cannibalizing Apple's sales in the short term, for long-term stability Apple needs to more broadly license its Mac OS, according to industry watchers.

"It's what Apple has to do to expand the market," Zlotnikov said.

But to appeal to potential licensees, Apple needs a more compelling operating system strategy, analysts said.

Some industry observers have criticized Apple's recent decision not to deliver Mac OS 8, code-named Copland, but rather provide periodic updates to its operating sys-

"The OS story is really hurting," said David Card, an analyst at International Data Corp. in Mountain View, Calif. "Copland isn't going to work, and now Apple needs to figure out what will work."

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1960

The IRS makes the first major automation with the Tax Administration System

1968

The IRS determines tax systems, based on 1950s concepts, need to be replaced. It launches a first attempt to modernize systems.



1978

The White House cancels the tax system overhaul, citing concerns about privacy and security.

1982

The IRS launches a second tax system replacement program, Tax System Redesign. Goals: upgrade hardware, speed information access, link related data, automate manual activities.

1985

The Treasury Department disapproves the IRS' project plan, saying the objectives are too general and the plan would outsource too much.

1986

The IRS wins Treasury approval for a third approach to redesign. The Treasury says it is troubled by lack of progress on the project.

1988

Oversight agencies express concern about the complexity of the huge program, which the IRS estimates at \$4.4 billion and expects to be completed in 1998.

1988

The IRS begins planning the Document Processing System (DPS), the key to its strategy of paperless processing of tax returns.



1990

The GAO faults the IRS for not having a master plan for the project – now called Tax System Modernization (TSM).

1991

The IRS' design master plan "does not address key issues vital to success of the modernization," the GAO says.

1992

The IRS' "planning, technological readiness and procurement and systems development processes" are badly flawed, the GAO says.

IRS: Tough to get any respect

By Gary H. Anthes

The IRS has agreed with much of the criticism leveled at it over the years, but the agency claims it hasn't gotten the credit it deserves for having made substantial improvements to its systems.

"All this criticism is leveled by people who can't recognize a huge amount of progress," said Hank Philcox, former chief information officer at the IRS and now CIO at DynCorp in Reston, Va. "We wasted \$2.5 billion? No, we built an infrastructure. To say we made no progress ignores where we started from."

Philcox said that when he assumed responsibility for TSM in 1986, the IRS' computer systems were on the verge of collapse. Underpowered mainframes and ineficient software took five days to do "weekend" file updates. The 1985 tax-filing season was an information systems and public re-

lations disaster as tax refunds to 85 million individuals suffered long delays.

Essentially no data was available online, so IRS workers relied on tons of paper documents and computer printouts. Updates to the master file — on some 3,000 magnetic tapes — were propagated to regional centers by flying tapes across the country.

As a result of the 1985 fiasco, the IRS established three key systems priorities: boost computer power and optimize existing software, connect IRS centers with a high-speed data network and automate the manual processes of case workers by getting key tax information online. By the early 1990s, Philcox said, automation plus the network had reduced processing delays and manual effort so much that the IRS was able to eliminate 4,500 clerical positions.

Philcox said the new Integrated

Collection System, scheduled for full implementation in 1998, has improved by 30% the productivity of case workers where it is in-

stalled. But final rollout of that system and other worthwhile systems in the development pipeline — depends on the IRS' future budget for the Tax Systems Modernization program, said Mark Cox, director of the IRS' southwest district.

The budget and plans for this latest collection system are under review by the

IRS. Cox said the IRS has accomplished much over the past five years. "I don't think it's a totally negative story at all," he said. "I keep hearing people externally saying we haven't gotten the mes-

sage, but folks internally have gotten the message on what needs to be done, and they are trying real hard."

The agency has also been listening lately to the siren song of outsourcing. Declaring that its expertise is in taxes, not systems, it has been parceling out more pieces of TSM.

Philcox agreed with the GAO's call for the IRS to do business process reengineering, but he said the IRS' decision to automate only existing process.

es was the correct one at the time.

"Our strategy all along was to get the near-term improvements and to ensure a return on investment as we went along," he said. "And we did that."



The IRS' ex-CIO Hank
Philcox: To say we made
no progress ignores
where we started from'

Failures cost taxpayers \$50B

CONTINUED FROM PAGE 1

from 87% of amounts due today to 90% by 2001. At current collection levels, that 3% is worth about \$50 billion per year, or more than \$500 per U.S. household.

"The opportunity costs of not doing tax systems modernization are huge," said Lynda Willis, director of tax policy and administration issues at the U.S. General Accounting Office in Washington. "System improvements are necessary for getting to that 90%."

"Tve seen abuse of the tax system that would turn your stomach," said Hank Philcox, former chief information officer at the IRS. "You wouldn't believe what some people get away with, and information tech-

nology can offset a lot of that unfairness."

But it doesn't — at least not yet. The IRS has 8,500 people in information systems management and development, and 2,000 of them are assigned to tax systems modernization. A recent estimate by a committee of the National Re-



IRS Commissioner Margaret Richardson: We recognize that our software capabilities, as well as those of our contractors, must be improved'

search Council in Washington said there are 10 outside contractors working on the Tax Systems Modernization (TSM) program for every IRS employee on the project.

"The IRS has spent \$4 billion on TSM so far and has basically nothing to show for it," said Rep. Jim Lightfoot (R-Jowa), chairman of the House committee that approves IRS funding. He is one of the IRS' most vocal critics.

Although the IRS has made some progress in recent years in improving its computer systems (see story, next page), critics have trained a harsh spotlight on some troubled development activities at the agency.

According to government and private groups that have reviewed the IRS' systems work over the years, the agency's biggest problems center on several key areas. They say the agency has done the following:

 Failed to do much-needed business process redesign before it began its systems development.

 Neglected to develop an overall systems architecture or development blueprint.

 Employed primitive and, at times, "chaotic" software development methodologies.

• Failed to manage information systems as investments.

Neglected information security.
 "We recognize that our soft-ware development capabilities, as well as those of our contractors, must be improved," said IRS

Commissioner Margaret Richardson. "We have taken steps in that direction."

To appease its critics, the IRS has made several major adjustments in its approach to the massive modernization program, which is a collection of about 50 projects. The agency last year overhauled its TSM plans, scaling back some activities and postponing others.

Cutting back

"Perhaps we took on too much, and we cannot afford to do all this at once," acknowledged Marilyn Soulsburg, a TSM executive at the IRS. She said the agency has decided to outsource more of the program and to cut back individual development efforts to no more than two-year projects.

But outsourcing won't be a "silver bullet," said Rona Stillman, chief scientist for computers and communications at the GAO. Her agency has written dozens of reports criticizing TSM management. "They'll do no better with outsourcing than they have with in-house development unless they can institute some discipline," she said.

Some earlier outsourced work, such as the \$1.3 billion Document Processing System (DPS), has produced dubious results so far. Intended to scan and capture data from incoming tax forms, the DPS

Special Report: TAX SYSTEMS FIASCO

40 whacks with the budget ax

he IRS has proved an irresistible target in this election year. Reform Party can-didate Ross Perot would abolish the cy altogether, and Bob Dole would reduce IRS staff by 30%. Meanwhile, Congress recently slashed the IRS' 1997 budget request for TSM by almost 50%.

"It's clear we can no longer give the IRS a blank check for TSM," said Rep. Jim Light-Postal Service and General Government ittee. "We cut [the total agency budget 2% two years ago, and they squeal like stuck pigs, so we cut it 11% this year." The IRS' 1997 funding, which Congress

approved last month, earmarks \$420 million for TSM. The funding legislation directs the IRS "to transfer, by July 31, 1997, a majority of TSM development, deployment, management and testing to the private sector."

• Implement a rigorous process for selecting, prioritizing, controlling and evaluating major IS investments.

• Improve systems development practices from ones that are ad hoc to ones in which



Rep. Jini Lightfoot: 'It's clear we can no longer give the IRS a blank check for [Tax Systems Modernization]'

process discipline ensures that successes

— including an integrated system architec-ture, security and data architectures and

both penny and pound foolish," said Deput Treasury Secretary Lawrence Summers. He cited an IRS study that showed the agency collects \$4.25 in tax revenue for every dollar it spends on tax-compliance measures.

Speaking recently to an American Ear Association convention. Summers said cutting collection efforts will add as much as \$1 billion to the deficit next year alone. "The IRS is too convenient a political target; it's politically popular to beat up on the IRS," said former IRS CIO Hank Philose.

True enough, but even the tax system watchdog committees have tried to help out with some "Systems 101" advice for the IRS.

Among their suggestions were to hire more ally proficient managers, developreal metrics for IS performance and enforce

standard interfaces on key applications.

"A lot of what has been developed could be rolled out today if they just had the funds," Philcox said. He cited two new systems that automate paper-intensive process-es that have proved effective at a few sites but are being delayed by budget cuts.

- Gary H. Anthes

 Develop enterprisewide system blueprints It also directs the IRS, by October 1997, to

The IRS said it intends to comply with

The budget reductions for the IRS "are

• The Corporate Accounts Processing System, which is the central taxpayer account database and processing system at the heart of TSM. It will let the IRS perform extensive compliance checks, such as income and withholding validations, before fraudulent refunds are made. Today. those compliance checks are usu-

\$2.9 billion per year.

"The IRS has spent \$4 billion on TSM so far and has basically nothing to show for it."

- Rep. Jim Lightfoot (R-lowa)

was conceived in 1988 as a cornerstone of the IRS' strategy for automating manual and paper-intensive processes. It was also considered essential to meeting TSM's quality and cost goals.

But after having spent nearly \$300 million on the DPS, the IRS last week officially pulled the plug on the project. It blamed the cancellation on "revised priorities and budget realities."

"They are now looking at very basic things - such as what forms to scan and what data to capture - after spending hundreds of millions of dollars [on DPS]," Stillman said. "Why are they asking requirements questions so late in the game?"

Cybermess with CyberFile Stillman also pointed to the IRS' CyberFile project for electronic filing of returns. CyberFile was contracted out last year, but it collapsed last month under mismanagement after costing \$17 million.

"It was planned badly, contracted badly and built badly," she said.

In a letter to the House Governmental Affairs Committee, Stillman outlined 49 lapses in security alone in the CyberFile project. They included a hole in a data center wall large enough to walk through and passwords shared by employees and posted in public

"The bottom line is none of our

recommendations have been implemented - none," Stillman said. "Why? There is no organizational will. It's a matter of discipline, and nowhere have they exerted discipline."

In a written reply to that charge, the IRS told Computerworld it is "committed to implementing a more rigorous, disciplined approach to designing, developing and managing" IS investments. Next year will be "a transition year for TSM" in that regard, the agency said.

And while Congress rails, the GAO scolds and the IRS flounders, taxes go uncollected, shifting the tax burden to those who do pay their fair share.

When asked at a recent congressional oversight hearing how the agency can improve the collection of taxes, IRS Commissioner Richardson said, "Implementing the technology modernization program is vital."

Richardson said productivity increases from TSM will "translate directly into additional tax collections in the bank."

The TSM initiatives aimed specifically at increasing tax collections include the following:

• The Compliance Research Information System, which includes a sample database on which the IRS can model the effects of alternate compliance strategies. It is projected to increase tax collections

ally done after the fact.

· New statistical tools, which will be used to spot suspicious returns and evaluate the effectiveness of compliance techniques.

The IRS has already shown that modest system improvements can boost tax collections considerably. With new and improved "computer filters," the IRS last year spotted and rejected 4.1 million suspicious electronic returns. That is

up fourfold from the previous year.

The people who filed those returns were notified of the problems, which included an invalid Social Security number. But an audit later discovered that 29% of the rejected electronic returns were refiled on paper - with exactly the same errors - and resulted in refunds being paid. But there is no data available on how much monev was lost in fraudulent refunds.

And better computer checking of 1 million suspicious paper returns, coupled with more vigorous follow-up by IRS examiners, vielded \$800 million in added revenue and reduced refunds last

Despite those bright spots in an otherwise gloomy record, Willis said recent changes in TSM plans cast doubts on the IRS' ability to increase overall compliance from the current 87% to 90%, the 3% difference that would put \$50 billion more a year into federal coffers.

For example, the agency has postponed indefinitely its Taxpayer Compliance Measurement Program, the primary program for getting taxpayer compliance data. It also put on hold until after 2000 the ability to do up-front matching of tax returns and information returns such as 'W-2 and 1099 forms. Repeated requests by Computerworld to find out why these programs were delayed went unanswered by the IRS.

The IRS' approach to data input, including the DPS, is "high-tech. high-risk and high-cost." - GAO report

"Significant problems and delays" cited in three key IRS systems by the GAO. The GAO also cited "unfinished studies of the IRS" business operations" that should have been reflected in 1991 master

The IRS awards a 15-year, \$1.3 billion contract to IBM for DPS. The amount is three times more than 1991 estimated cost of \$379 million.

FEBRUARY 1995

"After eight years and an investment of \$2 billion, the IRS' progress toward its vision has been minimal Unmanaged risks threaten success."

Completed systems bring "marginal benefits." - GAO report

The IRS "re-scopes" TSM, decides to increase the amount of work outsourced from 40% to 66%.

DECEMBER 1995

National Research Council finds 'serious deficiencies" in the IRS' technical management, systems architecture, process improvement and systems security.

MARCH 1995

The IRS has "provided little tangible evidence that actions being taken will correct the pervasive management and technical weaknesses that place TSM, and the huge investment it represents, at risk." - GAO report

After spending \$270 million on the DPS, the IRS "is uncertain whether the benefits outweigh the costs." The IRS postpones the DPS pilot scheduled for January 1997.

SUMMER 1996

The Senate and House say they will cut the TSM budget and the DPS by 50% for 1997.

OCTOBER 1996

The IRS pulls the plug on troubled CyberFile and the DPS projects. Cost to date: \$300 million.



By Joseph Maglitta

The serious and costly delays in the Internal Revenue Service's Tax Systems Modernization program are rooted in deep cultural, political and organizational problems within that agency, many observers agree.

Yet even so, experienced information systems executives, megaproject managers and consultants say the decadelong project has much to teach other organizations tackling major technology projects.

really have the time.

• Use small time frames, "I will not commit to any deliverable that requires more than 12 months," said Christopher P. Higgins, a vice president at BankAmerica Corp. in San Francisco. "By then, the technology has changed and the business has changed."

The key, he added, isn't skimping on the project's requirements. Sponsors may chafe but don't hesitate to take three to six months to get a clear, detailed plan and

business case.

• Make sure you have the talent to do the work. The IRS and other organizations balk at admitting when a job is beyond them. It has "congenital disability" when it comes to attracting and retaining qualified systems management talent. "especially at the executive levels," said Paul A. Strassmann, former CIO of the U.S. Department of Defense and now a consultant in New Canaan, Conn.



the IRS is that major contractors, notably TRW, Inc., often are far sharper technically than the government employees who manage them. As a result, some charge, it is easy for the IRS to get buffaloed.

A simple remedy: Assign your sharpest managers to manage outsourcers.

"You see at a place like Xerox that spends \$3 billion on outsourcing [that] the key senior managers are as strong and competent as those from the [Electronic Data Systems Corp.] organization," Hammitt said.

• Set your customer service sights high. Another major mistake the IRS made was comparing its tax service and systems with those in other countries, according to Grover Norquist, president of Americans for Tax Reform, a Washington-based lobbying group and member of the National Commission on IRS Restructuring.

Service-minded organizations should always aim much higher, he said. "Instead of comparing how you do with the French tax system, for example, you should be looking at American Express, Citibank" and other leading customer-friendly firms, Norquist said.

• Start fresh if necessary. Don't be afraid to kill a runaway project, said Michael Hammer, president of Hammer and Company in Cambridge, Mass

"Burn it down and start again," he said. "By not doing that, you make the project



Americans for Tax Reform's Grover Norquist says the IRS should have patterned its approach on systems used at 'service-minded' companies, not other governments

Some of those lessons are painfully obvious: The keys to success remain strong leadership, technical competence and clearly stated goals and targets. Other nuggets of advice include the following:

· Avoid big bangs, "The words 'IT' and 'megaprojects' do not belong in the same sentence," said Gopal K. Kapur, president of the Center for Project Management in San Ramon, Calif. He and others advise "chunking" projects into small, stand-alone modules that deliver value in themselves. "You need to ask, 'If the project was halted today, would we be able to use what we delivered?' If the answer is no, go back," said John Hammitt, former chief information officer at United Technologies Corp. and now a vice president at Giga Information Group in Cambridge, Mass

• Pin down committed leadership. At the IRS, critics say the lack of clear project champions has been a big problem.

The IRS has had three commissioners in five years and two deputy commissioners without technical backgrounds, said Robert P. Clagett, A 30-year AT&T Corp. veteran, Clagett headed the now-defunct Committee on Continued Review of the Tax Systems Modernization from 1990 to 1995. "The [IRS] said. 'It's an improvement and upgrade. We don't have to get involved."

Kapur advises project leaders to make a list of 10 to 15 responsibilities for executives. Ask how many hours per month they can devote to the project and whether they

Payment receipt via electronic funds transfer.

ELECTRONIC MANAGEMENT SYSTEM Electronic data interchange with taxpayers, banks and other agencies.

CYBERFILE Electronic filing from PCs and the Internet.

Touch-Tone telephone filing of simple tax returns and forms

SIMPLIFIED TAX AND WAGE REPORTING SYSTEM Reporting by businesses to government agencies.

CUMENT PROCESSING SYSTEM

INTEGRATED CASE PROCESSING SYSTEM Telephone- and computer-based work environment to replace correspondence and face-to-face interaction with taxpayers.

AUTOMATED SELF-SERVICE APPLICATIONS Some features Internet-, PC- and voice-response-based technology to provide taxpayer assistance without interaction with IRS employees.

LECTRONIC FRAUD-DETECTION SYSTEM

of taxpayer accounts.

WORKLOAD MANAGEMENT SYSTEM Management and distribution of electronic case folders, and analysis and disposition

CORPORATE ACCOUNTS
PROCESSING SYSTEM
Central tax account database and tax
processing system, including compliance
problem detection.

REVENUE GENERAL LEDGER SYSTEM Transaction-based revenue accounting.

FACILITIES AND HARDWARE UPGRADES Consolidate data centers, upgrade mainframes, acquire file servers and build telecommunications infrastructure.

SUPPORT ACTIVITIES Software development environment, security environment and IS help desk. In testing

Operational for some filers

In prototype

ELECTRONIC Operational

Estimated cost to complete \$440 MILLION Canceled October 1996

> PAPER FILING

Estimated cost to complete UNKNOWN

Some parts CUSTOMER

stimated cost to complete

.

to complete UNKNOWN

COMPLIANCE

Limited capability scheduled for 1997

In design

In design

Partially complete

Partially complete

FOUNDATION COMPONENTS

Estimated cost to complete \$1.3 BULLON

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Opinior

1-800-AUDIT-ME

I've shamelessly stolen the headline on this editorial from an old Dave Barry column in which the humorist suggested that anyone who criticizes the IRS in print might as well have that telephone number. And now that *Computerworld* has investigated the staggering fiasco of the Internal Revenue Service's 10 years of tax systems modernization, we should probably brace ourselves for the auditors. After all, they're the

ones who finally got Al Capone.

But while we get our receipts in order, let's observe a moment of stunned silence for the \$50 billion in lost annual revenue (see our lead story, page 1).

That \$50 billion figure comes from calculating the opportunity cost of failure. It's the money the

feds would be raking in if the IRS had delivered on what it's been promising taxpayers for years.

"The IRS has spent \$4 billion on [Tax Systems Modernization] so far and has basically nothing to show for it," says Rep. Jim Lightfoot (R-Iowa), chairman of the House committee that approves IRS funding.

Reams of stories have been written about the various IS disasters plaguing the IRS' massive tax systems overhaul, which was supposed to automate and improve tax collection. But no one had ever calculated the hidden cost of the IRS failures until Computerworld's investigation by Gary Anthes.

Just think of the things that \$50 billion in lost revenue could buy. It could pay for about a quarter of our \$200 billion-plus military budget. It could supply a \$50,000 luxury sports utility vehicle to each of the 1 million or so good people in Lightfoot's home state of Iowa. It could even buy Bill Gates another new house.

What our stories make clear is that the IRS mainly failed at Common Sense 101 for systems development and planning. The agency ignored the basics of business process redesign, software development and even security fundamentals.

And speaking of fundamentals, I reckon it's time to go get our phone number changed



Maryfran Johnson, Executive editor Internet: maryfran_johnson@cw.com



Letters to the edito



Software testing merits more attention

Will Computerworld's Annual Salary Survey ("Posh payoffs," Sept. 2] continue to ignore a career area with more people than 80% of the job areas you cover?

I am talking specifically about jobs in software testing (test manager, testware designer, tester) and more generally about software quality-related jobs, such as quality support/assurance, process re-engineering and configuration management. Roger Pressman in the September issue of IEEE Software reported on the results of administering a Software Engineering Self-

Assessment Test to more than 2,500 software developers and their managers. He reported that software testing is among the most poorly understood areas among both groups. As testers, we have a lot of work to do to have our activities better understood by our colleagues. Will you help by showing that we exist?

Ironically, the demand for experienced testers has never been greater. Ask any recruiter.

David Gelperin Software Quality Engineering Jacksonville, Fla. sqegelp@aol.com

Microsoft tactics make it suspect

David Coursey, please check your facts about martial arts ("Netscape: Put up or shut up," CW, Sept. 16]. Aikido has nothing to do with the use of swords per se, either wooden or actual. Aikido is an unarmed martial art that mostly concerns itself with defending oneself against armed opponents.

Martial arts using sticks are generically called bo-jutsu. The most well-known such martial art is kendo. The wooden implement is a bo-ken—literally "wood-sword."

In any case, your partisanship for Microsoft makes your opinions suspect.

I personally wouldn't be caught, alive or dead, allowing important business functions to depend upon Microsoft products.

In the mid-1980s, General Protection Faults and Uninterruptible Application Errors of Windows 3.0 and 3.1 made it abundantly clear that only fools risk mission-critical data to Microsoft roulette. After a few scorching lessons, I went back to DOS-only applications until OS/2 stabilized at Version 2.1.

Michael G. Jones Palm Harbor, Fla. More letters, page 40

Using Explorer 3.0 a piece of cake

I am a little surprised by the difficulties your Canadian readers described about downloading and installing Microsoft Explorer 3.0, in your Aug. 19 issue ["Microsoft trips on Web; user complaints mar Explorer 3.0 ship"]. I downloaded the program a day or so after it was released and installed it on my machine, my wife's and my kid's, and then I put it on my machines at work. I like it a lot — no General Protection Faults, very fast, mail built in, news reader built in, and I con prevent cookles (right click, Properties, Advanced).

Brian Mahoney Seattle ■Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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Michael Cohn

The straight dope on year 2000 projects

bunch of folks out there are struggling with the year 2000 problem. It's ugly. It's hard. But don't go it alone — you'll screw it up. Join user groups. Call in consultants. Learn as much as you possibly can — then screw it up.

What you need is this basic, yet nowhere-near-foolproof, methodology for year 2000 projects (see chart). Every womb-to-tomb millennium project must go through these six steps. If you follow this methodology, you can walk up to your CIO in 1999 and confidently say, "We're compliant and fully tested. Let's get out of here before the stuff hits the fan."

1. Inventory. You can't do anything until you tally your date-critical code. That isn't easy. Your operation might be distributed. It might be global. By

the time you've got numbers for your mainframe system, desktop systems, telecommunications system and elevator system, you've probably done a number on your nervous system.

2. Assessment. Next, you have to tell the brass what impact the year 2000 project will have on your business. So conduct an assessment. It will likely show that you don't have enough people, time or money — and that's just for the non-2000 stuff you said you'd finish last year.



3. Plan. Once you've cost-effectively spent hundreds of thousands of dollars on an assessment, you need to more cost-effectively spend hundreds of thousands of dollars on a plan. You need a plan that tracks modules, resources, bridges, files ... the works. The year 2000 project really isn't rocket science; it's simply a project management problem — a project management problem that will likely squash your career like a grape.

4. Code modification. It's time to start the real

work. Your goal: Run head-down, 20 hours per day, for months on end, trying to handle all your dates. That will be a piece of cake compared with trying to handle all your programmers after two weeks of this death march.

5. Testing. Don't get hoodwinked by consultants who claim testing is 50% of the total project. If you already happen to have a bunch of extra processors, storage capacity, test beds, test scripts, test tools and test methodologies, you're probably in good shape. But if you're like the rest of us, testing can still help cut your year 2000 project budget in half — because you won't do any.

 Implementation. Finally, figure out how to put the whole mess in production. Maybe all at once. Maybe

one piece at a time. Maybe you can finish one piece without breaking all the other pieces. But when you reach this point, you've made it. You can stand on your desk, pound your chest and cry out: "We're finished! We're finally year 2000-compliant!" Unless by then it's 2003 — then you might want to keep the whole thing kind of quiet.

Cohn is trying to be a year 2000 project consultant in Atlanta, but he still wonders if 1996 was a leap year.

Michael Schrage

Outsourcing and

decentralization

may be the death of

the CIO.

Organizational charts really do matter

hile working the posh reception at her company's global information systems retreat, the chief information officer of a multibillion-dollar health care giant turned to me and confessed her greatest professional frustration: She reports to the chief financial officer, not the CEO.

"I think it really sends a bad signal to the orga-

"I think it really sends a bad signal to the organization about where IS ranks as a corporate priority," she whispered.

Maybe it does; maybe it doesn't. Maybe this is just the whine of a bruised ego, or maybe this is the voice of a savvy corporate politician who has learned the hard way what levers of power can't be reached. But there's a very serious managerial issue lurking here—one that has enormous repercussions for the future of IS governance.

Barely 15 years ago, the big debate was whether companies even needed a CIO. To this day, most organizations have trouble deciding what makes a CIO successful.

So let's take our CIO's frustration at face value and ask a simple question: What's more revealing about an organization's IS management in 1996? Is it the fact that the firm has a CIO at all, or is it whether the CIO reports to the CEO, CFO or chief operating officer? Practically every organization of any size has a CIO. The title, if not the role, has become a commodity. What hasn't become a commodity is the way organizations choose to organize their IS activities. Some organizations choose outsourcing, others are radically decentralizing, and still others are gue that recentralization via standards enforcement is the way to go.

In these scenarios, does reporting to a CEO

make more of a difference than reporting to the CFO? The issue of who reports to whom — and why — will become more important over time, not less.

The reasons are straightforward: CEOs, CFOs and COOs have different views of the organization. They often have different agendas and different managerial

competencies. Pecking order undeniably matters. Even if we put the volatile issue of personality aside, CIOs who perform brilliantly by CFO criteria might shine less brightly if they had to regularly interact with the CEO — and the converse holds equally true.

Based on anecdotal observation, I haven't a speck of doubt that CIOs who report to CFOs have to justify their technology investments using different metrics than those CIOs who report to CEOs. Does that make them any more effective?

Or any less strategic? That's unclear.

No doubt, there's a terrific doctoral thesis in sociology, economics, organizational behavior or computer science to be done on the relationship between IS effectiveness, the existence of a CIO and whom that CIO reports to in the organization. There needs to be more empirical research in this area.

We all hear the blather about the "strategic importance" of IS and the need for "top management commitment." But does that necessarily mean the CIO must report to the CEO? Does it mean IS departments are second-class citizens if they're housed within finance, operations or administration?

My belief is that the CIO position as we know it is cost-effectively dead. The ongoing organizational restructuring of IS makes a CIO less of a strategic leader and implementer than a harried air-traffic controller. Indeed, my best guess is that most organizations will discover that decentralization and outsourcing of IS will lead to a decentralization and outsourcing of technology leadership as well. CIOs will be CIOs in name only. Will that be a good thing? Why not ask that CIO's

Schrage is a research associate at the MIT Media Lab and author of *No More Teams!* His Internet address is schrage@media.mit.edu.



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Telcos are poised to take over 'net

The computer industry doesn't own the 'net anymore.

A recent series of seemingly minor regulatory skirmishes symbolizes the coming sea change in Internet leadership.

In the past few weeks, various longdistance and regional telephone interest groups have complained to the Federal Communications Commission that 1. Internet users are overloading their phone lines without providing adequate compensation; 2. long-distance Internet phone service should be either forbidden or regulated; and 3. Internet service providers should have to pay the same sort of access charges that long-distance carriers pay.

The merits of these claims are less important than the message they send. The telecommunications industry is tired of being merely a passive provider of bandwidth. It wants a say in how the Internet is run.

David Moschella



Carriers have a better record of building robust networks.

Not surprisingly, computer vendors have objected, sometimes shrilly. They still see the 'net as their domain. After all, the Internet uses their servers, routers and software. They might talk about the merger of computers and communications, but what they really want is a takeover. Hence the excitement over Internet telephony.

But if anyone is positioned to take over the Internet, it's the phone companies, despite a history of almost comical ineptitude in their computer endeavors. The fact remains that a tenfold increase in local loop bandwidth would do much more to move the Internet forward than any similar increases in microprocessors, disk drives or even routers. In other words, the Internet's single most important technological need is something computer vendors can't provide. This marks a fundamental turning point in the computer industry's history.

In the next two years, national phone companies will almost certainly come to dominate local Internet access and backbone transmission in most markets. Inevitably, they will experiment with tiered and usage-based pricing and perhaps even Internet service provider and international access charges.

Moschella is senior vice president of research at Computerworld, Inc. in Framingham, Mass.

Having gained control over delivery and pricing, it's only a small step for the phone companies to become key players in emerging areas such as real-time audio and video, advanced routing, broadcast capabil-

ity, traffic management and point-to-point connections. As voice and Internet messaging come together, they even have a good shot at the big software prizes of directories, addressing, domain names, content

identifiers and security.

If even half of this comes to pass, the phone companies will become equal partners in the development of the 'net. That would be a good thing. The telephone industry has a far better record for building reliable, interoperable networks than the computer industry. It has more to offer than most of the 'net community realizes.



"An increasing number of AD organizations realize the limitations of the tools now in use, and look either to an enterprise C/S tool or to a new standard workgroup tool for future development."

—Gartner Group



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Letters to the editor

Review disappoints

After reading the article by Garrett N. Ray on Microsoft Corp.'s Internet Explorer 3.0, I was amazed that it was awarded a B+ as tested ["Explorer gains ground," CW, Aug. 19]. I was under the impression that a C meant average, B meant above average, and a B+ meant well above average.

Does a program that has a severe security problem — one that could allow a Web page to manipulate data on your computer — and "multiple performance problems" rate as "well above average"

for your publication?

A program that has security programs, performance problems and is "still imperfect" should rate a C at best. Even if the company is making progress toward resolving these problems, a high grade should not be awarded until the application's shortcomings have been fixed.

If this product can rate a B+, then I have

pity for your readers, because Computerworld appears to have low rating standards. It also gives an impression of extreme bias toward Microsoft and/or Windows. I will no longer use your reviews of any product because I no longer have the expectation of objectivity and high standards from your publication.

Ian D. Sliwinski San Jose, Calif.



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Privacy regulations not always respected

Your In Depth article about online snooping [*Online Snoop,* CW, Aug. 12] quite adeptly pointed out the amount and nature of personal information that is available about individuals through the Internet and private investigative services. You might be surprised to learn that providing or obtaining some of that information is a criminal offense.

For example, credit information about an individual is protected under Federal Trade Commission law. Credit agencies such as TRW, Inc. and TransUnion Credit Information Co. — and those who obtain that information without the consent of the individual — can be punished or sued under federal law. Certain other records created by government agencies are also protected by law from public or unauthorized access.

It is unfortunate that many investigators think they have the right to disregard these laws. Many of them are former law enforcement officers who seem to think the law does not apply to them. It's also unfortunate that our courts and criminal justice systems do not see fit to enforce these laws.

What we really need is an In Depth column on how to protect ourselves now that you have communicated how exposed we are.

Ray Thomas Cleburne, Texas

The mayor's fumble

I read with particular delight the use of technology by our local government organization ["City blazes own IS trail," CW, Sept. 16]. However, it is too bad that the lady in the picture, Mayor Sam Kathryn Campana, does not appreciate the capabilities of the technology.

My reason for saying this revolves around the recent disclosure in the local media that she has used the 911 emergency calling system to get assistance in finding buildings in Scottsdale at least a dozen times in the past nine months.

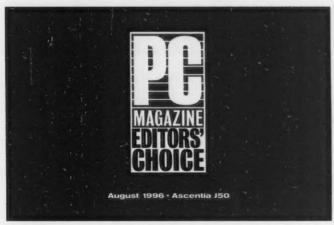
I am not sure whether she is not capable of using this great geographical information system or that she is monumentally insensitive to what the 911 service is supposed to be. Either way, we all got a great belly laugh out of your article, especially the line about "the mayor, who taps in to the GIS...." Mayor Campana is taking a lot of heat on this subject right now.

Ron Meyers Cave Creek, Ariz.





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Snapshot eases backup

By Michael Goldberg

Mainframe users say Snapshot Copy, a new IBM storage feature, could quicken their batch processing and application testing. The product creates a virtual copy of data without requiring more disk capacity.

The technology is similar to copying the index of a book so you can locate important points without having to duplicate the entire tome

The feature is available on IBM's Ramac Virtual Array, which was formerly sold by Stor-

age Technology Corp. as the Iceberg subsystem. IBM has resold Iceberg and other StorageTek disk arrays (see chart) since July. Snapshot Copy also is available to Iceberg users.

Iceberg and Virtual Array use a log-structured file system to keep track of data stored on disk. Snapshot copies a set of pointers that indicate where data is located on disk: users then have two reference lists for the same data.

This replaces the usual process of making a backup copy of data or creating a subset of the data to Snapshot, page 49

Iceberg	Ramac Virtual Array
Kodiak	Ramac Scalable Array
Arctic Fox	Ramac Flectronic Array

Brief

DG expands server family

Data General Corp. has expanded its Aviion server line with the introduction of a quad-processor server based on Intel Corp.'s high-end 200-MHz Pentium Pro chip. Pricing for the AV 3600 will start at about \$12,000. AV 3600 will support up to 4G bytes of memory, 15 I/O slots and several operating systems, including Windows NT and DG Unix. The systems currently are shipping.

Sun shines on clusters

Targets high-end Unix market

By Jaikumar Vijavan

Microsystems, Inc. is putting more weight behind its recent push in to the high-end commercial Unix server market with clustering.

The company last week bolstered its server offerings with the introduction of Ultra Enterprise Cluster technology that will let users tie two Sun servers in a high-availability configuration. If one server crashes. the other automatically backs up and controls all applications on the failed server.

Using Sun's clustering technology, corporations can tie together two 30-processor Sun servers, with one acting as a backup to the other.

Performance boost

The technique significantly enhances systems availability and reliability - crucial factors for corporations that want to run large, critical applications on servers.

This kind of fail-over cluster-

VESA standards for display clarity. Their spacious 15.7°

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resolution, which translates directly to improved working

ing capability has been available for years from vendors such as IBM and Digital Equipment Corp., but it hadn't previously been available from Sun.

The highlight of Sun's announcement is the service-level guarantees the company is building into its cluster offerings.

Scales from Ultra Enterprise 2 workgroup clusters to high-end Ultra Enterprise 6000 clusters

Supports up to two 30processor Ultra Enterprise 6000 systems

Has application-specific failover scripts

Sun will offer an Ultra Enterprise Cluster Support Services Package from SunService that includes installation, consulting services, operator training and support.

As part of the offering, customers can buy a systems-availability contract that guarantees system uptime

Other vendors, including NCR Corp. and IBM, offer similar application- and customerspecific availability guarantees.

"This kind of a guarantee makes a positive statement about Sun's willingness to stand behind its technology," said Jay Bretzmann, an analyst at International Data Corp. in Framingham, Mass.

"We will be watching Sun's [clustering] product evolution very closely," said Pompi Malik, MIS manager at Brewers Retail. Inc., a large beer retailer in Mississauga, Ontario.

High-end clustering

The company doesn't expect to need high-availability clustering technology for at least another vear or so. Malik said. Before Sun's announcement, the corporation had considered thirdparty clustering technology to eventually tie its Sun servers together.

"So far, the technology has been too expensive for us, but we are eventually going to find the need for the kind of highspeed data recovery" that Sun's clustering products will offer, he said.

Sun will offer the new cluster-Sun, page 45

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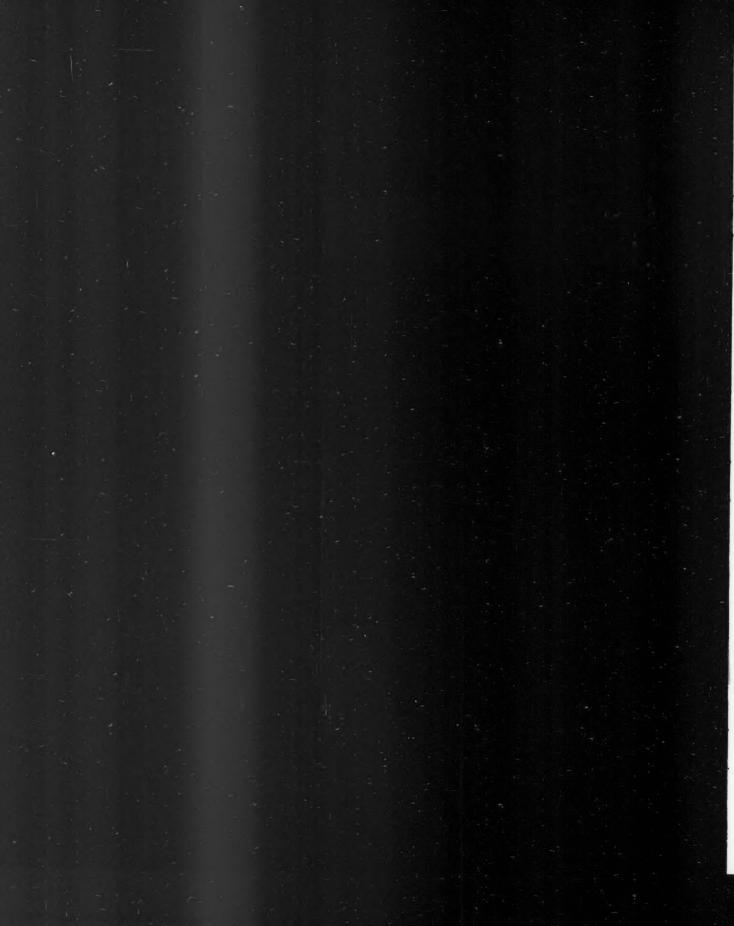












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Snapshot, page 49

In June, IBM agreed to sell StorageTek's	Old name	New name
mainframe storage systems under the IBM	Iceberg	Ramac Virtual Array
Ramac label	Kodiak	Ramac Scalable Array
	Arctic Fox	Ramac Electronic Array

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"This kind of a guarantee makes a positive statement about Sun's willingness to stand behind its technology," said lay Bretzmann, an analyst at International Data Corp. in Framingham, Mass.

"We will be watching Sun's [clustering] product evolution very closely," said Pompi Malik, MIS manager at Brewers Retail Inc., a large beer retailer in Mississauga, Ontario.

High-end clustering

The company doesn't expect to need high-availability clustering technology for at least another year or so, Malik said. Before Sun's announcement, the corporation had considered thirdparty clustering technology to eventually tie its Sun servers together.

"So far, the technology has been too expensive for us, but we are eventually going to find the need for the kind of highspeed data recovery" that Sun's clustering products will offer, he said.

Sun will offer the new cluster-Sun, page 45

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Sun announces clustering for Unix servers

CONTINUED FROM PAGE 43

ing technology across its entire server line, ranging from Ultra Enterprise 2 workgroup clusters to the high-end Ultra Enterprise 6000 clusters. Sun's clustering technology is built around a commonly available interconnect called Scalable Cluster Interface from Dolphin Interconnect Solutions, Inc. The interconnect allows two systems to be tied together in a high-availability configuration.

It will also let users scale their systems beyond two nodes as their application needs grow.

"With Sun positioning itself as a commercial enterprise server vendor competing with IBM and HP, they have to make sure to have the same kind of robustness and reliability" that other vendors offer, said Jean S. Bozman, an analyst at International Data Corp. in Mountain View, Calif.

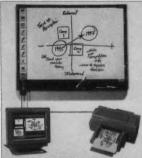
"This is something that just needs to be available to users who are going to put their business-critical applications" on these servers, she said.

New Products

MicroTouch Systems, Inc. has announced Ibid, a computerized whiteboard.

According to the Tewksbury, Mass., company, Ibid offers the visual communication abilities of a whiteboard for showing colored diagrams and text. Users save the results in PC memory and incorporate them in most Windows-based applications, including electronic mail.

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lbid, a Windows-compatible whiteboard from MicroTouch Systems

P. I. Engineering has announced Y-See-Two Video Signal Splitter. The product automatically splits and boosts a computer's video signal and allows the simultaneous use of two monitors.

According to the Williamston, Mich., company, the splitter is a Y-shaped device that receives power for its amplifiers from the keyboard port. It requires no external power supply, It costs \$79.95.

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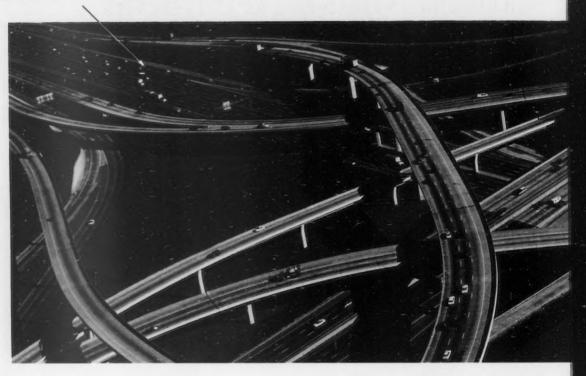
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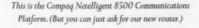
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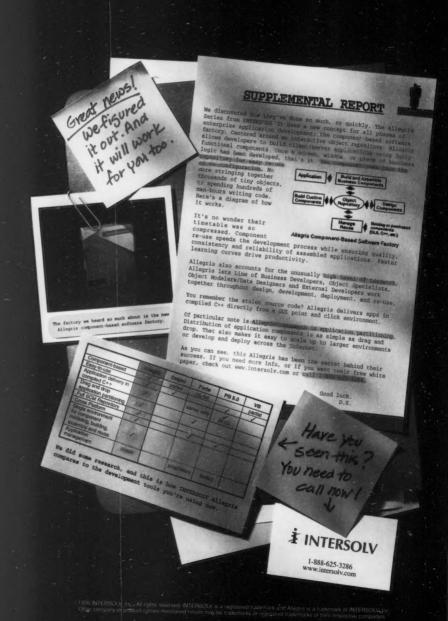






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Snapshot eases backup process

CONTINUED FROM PAGE 43

use in testing new applications or other functions. Users can save money by using less disk space. And creating a second set of pointers takes less time than replicating a database observers said

One drawback to Snapshot is its lack of support for VSAM files, a file type widely used by System/390 shops in legacy appli-

An IBM spokesman said the company expects Snapshot to support VSAM files by the middle of next year.

"The value is the prospect of being able to instantly copy a volume or a data set," said Kenneth Grant, manager of storage management at Kaiser Permanente Health Plan. Inc. in Pasadena, Calif., a user of Iceberg systems.

Grant said Kaiser Permanente has tested Snapshot on a limited basis, but he is waiting for VSAM support before fully imple-

With VSAM support, Grant said, Snapshot would make it easier to process hospital patients on Sundays, when computer systems are down for four hours for database backups. Using Snapshot would reduce downtime to a few minutes and allow staff to process patients when they arrive instead of completing paperwork later, he

Another Snapshot beta tester, Richard Fernandez, assistant vice president of computing services at Insurance Services Offices, Inc. in Pearl River, N.Y., said the technology also would improve testing of new applications because developers can access their own copy of an entire database

"Snapshot allows you to make an instant copy of your production files without stopping your workflow. You can make that [data] available immediately. You've gained some time." Fernandez said.

Briefs

Sharp hits WideNote

Sharp Electronics Corp. in Mahwah, N.J., has released WideNote, a wide-screen format notebook computer. The notebook weighs 4.6 ds and has a 133-MHz Intel Corp. Pentium processor, 1.1G bytes of RAM, slots for two Type II PC Cards or one Type III PC Card and a lithium ion battery. The notebook line will range in price from \$2,999 to

IBM stores It...
IBM is making a \$380 million investment in its storage division to increase cording (MR) heads for disk drives IBM, which uses its MR heads only it its own hard drives, wants to sell MR heads to OEMs by the end of next year. An MR head is a recording device the size of a pinhead that can fit more data in a disk drive and is less expensive to make than standard thin-

... and clusters it

IBM this fall will introduce Unix clustering software that quadruples the number of RS/6000 systems that can be tied together. The company sup ports eight-node clusters with its current clustering product, HA/CMP. The newtechnology, code-named Phoenix, will handle up to 32 systems initially and expand to 128 next year, according to IBM officials. Phoenix will ship on IBM's RS/6000 SP parallel processors this year and is expected to be available on general-purpose RS/6000s by the first quarter next



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Java hits Wall Street

By Sharon Gaudin

inancial giants on Wall Street are stepping up to the counter and ordering a cup of Java. The Java development

language, fueled by the growing fervor over the Internet, has picked up speed and mind share in various industries in the past year.

But the financial district has an espe cially early and firm grip on the language, which is so new that it is still in Version 1.0 release and remains largely untested.

"We have talked with every large financial institution in New York and all of the Northeast about Java. Every single one is turning toward Java," said Stephen Siegel, Ph.D., managing director of U.S. operations at Fusion Systems Group, Inc. Fusion is a New York-based computer consulting firm for financial companies.

"Financial institutions are early adopters, so that removes any new technol-



ogy barriers for them. And Java speaks to the pains they've been having in terms of cross-compatibility, the Internet and software distribution," Siegel

Java. Sun Microsystems. Inc.'s crossplatform development language that is largely used for Internet applications, has been catching on. But many companies are delaying deployment of Java applications until the language has a few more miles under its belt.

There are some concerns about security with Java, but most surround hostile applets that users download from the Internet into a business' system. The fi-

nancial firms turning to Java are dodging security concerns by building applications in-house.

Visual development tools such as Symantec Corp.'s Visual Cafe are just hitting the market, and the shelves of Java libraries still are fairly empty.

Just the place

But that doesn't seem to be slowing the Java ramp-up at Lombard Brokerage, Inc., a discount brokerage in San Fran-

"The financial industry is the perfect industry for the Internet," said John MacIlwaine, president and CEO of Bay One Technologies, a division of Lombard Brokerage. "It's real-time, it's graphical, and you can download charts and spreadsheets. And Java only enhances that relationship.'

MacIlwaine said Lombard is starting fairly slowly, first converting some C++ programs to Java. Lombard uses servers that run SunSoft, Inc.'s Solaris operating system.

He said the company is building an order-entry application to replace a process in which traders punch information into a mainframe terminal and handle their own calculations.

"Now a broker hits buttons and calcu-Wall Street, page 60

Document management group extends standards

In a move users are likely to welcome, the Open Document Management API Forum (ODMA) has expanded its application programming interface (API) standard to allow single queries across multiple repositories.

The extensions, a set of 23 APIs, let developers give users access to document management repositories in multivendor environments. That, in turn, should help businesses that have mixed document management environments save time by easing the exchange of information among repositories.

Carl Frappaolo, vice president of Delphi Consulting Group, Inc. in Boston, said the move pushes the ODMA's standard to a higher level of functionality.

"This is very important be-

ODMA extensions

 Stronger interoperability between desktop applications and document management

cause it's something users have been asking for for many years," Frappaolo said. "If I need to locate information [and] I don't necessarily know where it is, I don't want to have to log in to ev-

the regulatory affairs depart-Documents, page 54

ery [repository] collection to Ruby Bishop, manager of documentation and publishing in

Oracle network vision cloudy

By Craig Stedman

Oracle Corp. this month has been giving select customers a glimpse into its network computing crystal ball.

But its product vision remains mostly cloudy, say several users who received advance briefings from Oracle about its Network Computing Architecture (NCA).

As a result, even loyal Oracle shops are finding it hard to tell whether the promised NCA will meet their need for a simpler method of connecting clients to distributed servers.

NCA, which was announced two weeks ago, is a cross-platform network infrastructure built on the Object Management Group's Common Object Request Broker Architecture (CORBA) technology for routing objects across networks. Like other CORBA backers such as IBM. Oracle wants to provide an object bus that lets customers quickly deploy applications and then rely on the underlying technology to connect end users to data

The object-based concept holds great interest as a potential way to

cut down on the mishmash of middleware users have to deal with today. But Oracle has to prove there is really something behind its marketing presentation Oracle's vision, page 54

Short-term outlook

Oracle plans to ship the following NCA-compliant products and features in the next six months

NetSolutions tools for Web-enabling existing applications

· Oracle WebServer 3.0 with support for distributed transactions Ability to call WebServer plug-in cartridges from Oracle 7.3.3

• Oracle WebServer 3.1 with object request broker, IIOP/DCOM bridge

Q2 1997:

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Now That's Progress

Code-free applications are Magic

Since its inception more than five years ago, Magic Software Enterprises. Inc.'s Magic database development environment has delivered a simple if unique proposition: code-free applications.

Magic 7, now available, doesn't change that fundamental premise. But it does add some enhancements that should please corporate database jockeys.

The major updates to this version of Magic include the following: Internet and World Wide Web capabilities; support for 32bit environments, including Windows 95 and Windows NT on Intel Corp. and Digital Equipment Corp. Alpha platforms: and a host of internal and user-interface enhancements

The release continues Magic's longtime support for rapid application development prototyping and database development.

For this review, we tested an evaluation version of Magic 7 on a Windows 95 stand-alone system, primarily focusing on the Magic development environment.

Building the structure

Magic is entirely a table- and forms-driven development environment. To build applications. developers first construct database files, fields, data types and keys. Those characteristics are assigned by the developer through a series of visual forms and don't require any coding.

Having created a basic database structure, developers then add program logic, which can be so than writing database programming code

Using Magic's Program Dictionary, developers first create however many discrete program tasks will be required.

For example, an Update Orders task might be created to allow end users to open a Customer Orders file and make modifications to an order quantity. A subsidiary Task Execution definition determines precisely which database fields will be displayed on the user's screen. There are provisions for computed fields and an array of date, string, and logical functions associated with field-level data.



Screen layouts can be automatically generated by Magic or customized by the database developer. A complement of layout controls allow further customization, such as adding Microsoft Corp. OLE 2.0 documents, images or data to a record display.

Magic developers can run a syntax check or execute a program at any time throughout that

Report creation requires essentially the same visual process as described above and is fundamentally no different than developing a screen report. A help-development system allows the creation

Once you grasp the Magic development process, it is fairly simple to create databases, reports and programs without a lot of effort. But developers who favor procedural code may find it difficult to adjust to this entirely visual metaphor Even embedded SQL is unavailable to Magic developers, although company officials say it will be available in a future version of the product.

Once a Magic application has been created and tested, it can be deployed to any other platform for which the Magic runtime system is available. Operating system platforms that are currently supported include Novell, Inc.'s Net-Ware, Microsoft Corp.'s Windows NT and Windows 95, IBM's OS/400 and several Unix flavors

Magic 7 includes support for Btrieve Version 6.0 and Open Database Connectivity Version 2.0 database engines. Other databases gateways are available for Microsoft's SQL Server, Oracle Corn's Edb databases from Informix Corp. and nearly a dozen other databases. Prices for these gateways vary.

Internet middleware

Internet and Web functionality for Magic 7 applications are provided by the Magic WebLink middleware. The software, which wasn't tested for this review, acts as a translator between Magic pseudocode and Hypertext Markup Language (HTML) code.

As with other Web middleware such as Borland International. Inc.'s IntraBuilder (see review,

Magic 7 Overall grade.

page 100), developers aren't required to write applications in HTML, and users need only an HTML-compliant browser to use the technology.

Magic WebLink functions with

Windows NT servers such as Netscape Communications Corp.'s Commerce Server or Microsoft's Internet Information Server.

Documentation for Magic 7 is extensive and well-organized.

Developers who are comfortable with the visual programming metaphor and the inherently proprietary bias of Magic will find it a viable solution for rapid application development in small to midsize programming efforts. But Magic is a closed development and deployment system; once the decision to use it has been made there is no turning back.

Ray is an Internet consultant and writer in North Conway, N.H.

Oracle's vision

CONTINUED FROM PAGE 51

slides, they said.

"It's very difficult to assess the value of something that's not real, and this is not fully baked yet,' said Charles Nettles, director of technology in the Information Technologies division at McKesson Corp., a pharmaceuticals distributor in San Francisco.

New approach

An approach such as NCA would be a welcome replacement for the variety of point products that McKesson has to use now to match clients with servers. Nettles said

The current approach "gets very complex and therefore expensive to support," he said. "But I can't get my hands on [NCAcompliant] products today.

NCA "looks like a pretty reasonable architecture," said Erwin Berliner, manager of the database and performance division at Chevron Corp. in San Ramon, Calif. "But we need to get moving here early next year, and we can't just go on relying on vaporware stuff'

Chevron, which has about 25,000 desktops, desperately needs something such as NCA to help it cut down on the huge clients required to support the middleware mix it uses. Berliner said. But he said the company may have to orient itself more toward Microsoft Corp.'s Distributed Component Object Model, a rival to CORBA-based approaches.

Beatriz Infante, senior vice president of Internet and media products at Oracle, said most product details were intentionally left out of the NCA announcement. "If you present all that information at once, you kind of overwhelm the audience," she said. But that doesn't mean the road maps aren't there.'

Oracle spelled out its NCArelated shipment plans for only the next six months, and that touched on just a subset of its products



"It's very difficult to assess the value of something that's not real. and this is not fully baked vet."

Charles Nettles.

Infante said more specifics will be released at forums such as Oracle's user group conference next

But industry observers said it could take up to two years for Oracle's vision of a universal application server to come to fruition.

Documents

CONTINUED FROM PAGE 51

ment at Baxter Healthcare Corp. in Glendale, Calif., said his company uses DOCS Open, a document management system from PC DOCS, Inc. in Burlington, Mass. But it needs to communicate with a joint venture partner that uses a system from Documentum, Inc. in Pleasanton, Calif.

Time-saver

"This will give us the ability to transfer documents and give people read access to what they need," Bishop said.

Otherwise, documents would have to be placed on diskette and sent in the mail, she said. "This saves time and money.'

The standard created by the ODMA eclipses a more comprehensive standard being developed by the Document Management Association (DMA), another document management standards group aimed at interoperability at the server level.

The ODMA traditionally has aimed its work at the desktop.

Read all about it

The ODMA query extensions are at the AIIM World Wide Web site at www.aiim.org. For more information about ODMA, including a copy of the specification, product registration and membership information, contact Jeanette Rogers at (301) 587-8202, or by electronic mail at www.irogers@aiim.org.

bringing document management standards in line for applications such as word processing.

Frappaolo said the move by the ODMA may confuse some users because members of this standards body are almost always members of the DMA.

But Marilyn Wright, vice president of standards and technical services at the Association for Information and Image Management (AIIM), oversees both standards groups and says the ODMA extensions are the tip of the icehere compared with what the DMA will introduce in December. The DMA standards will include version control and check-in and check-out capabilities, she said.

The ODMA specification, while much more simple, will complement the DMA standards, Wright

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Users not clamoring for Office 97

By Lisa Picarille

A major update to Microsoft Corp.'s Office suite of productivity applications is due by year's end, but some users said they don't plan to deploy the forthcoming release immediately.

While Microsoft doles out weekly information updates on the package, some of Office's bread-and-butter corporate users recently listed the following reasons for taking the wait-and-see approach:

 Wisers haven't yet deployed Windows 95, which is required for optimal Office 97 performance. Users are skipping Windows 95 in favor of NT and concentrating on deploying that operating system.

• Some users claim they have yet to out-

• Users need time to sort through the update, which is packed with new features.

"We haven't even moved to Windows 95 yet," said an information systems director at an East Coast manufacturing firm who requested anonymity. "I have many other more pressing issues, like upgrading desktops and servers. The new version of Office is the least of my worries. The old version is serving us just fine for now. There is no way to cost-justify the upgrade."

One developer said corporate users who already have Windows 95 are more eager to deploy Office 97.

"Our users are relatively interested in getting their hands on Office 97 because of the new features in Access and Excel," said Michael Mullin, director of sales and marketing at MTX International, Inc. in Englewood, Colo. The company develops an Office-compatible accounting system.

But Mullin estimates that only 20% to 30% of MTX's 2,000 customers will deploy Office 97 when it becomes available at the end of the year.

Feature-packed

One user said Office 97 is such a major release that it will take some time to wade through the new features and determine a deployment plan.

"There is so much in the new version that I'll have to evaluate the product and determine which users need to have it first and then go from there," said Brian Moura, city manager for San Carlos, Calif.

But one analyst said despite the new features in Office 97, most users haven't outgrown the current version.

"It's getting harder and harder for suite developers to come up with compelling new features that will excite users enough to make them upgrade," said Jeffrey Tarter, editor of "Softletter," a newsletter in Watertown, Mass. "Unlike cars, software doesn't rust, and so a lot of users can't cost-justify upgrading every 12 to 18 months."

One user said his company plans to move to NT in the next two years. Therefore, it won't be rolling out Office 97 to its 500 users in the near future, he said.

"I can't really say when we'll get to deploying [Office 97]. Hopefully, it will be before [Microsoft] comes out with Office 98 or 99," said Peter Bavoso, vice president of IS at The Darby Group, Inc., a Westbury, N.Y., pharmaceutical company.



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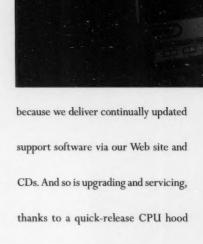
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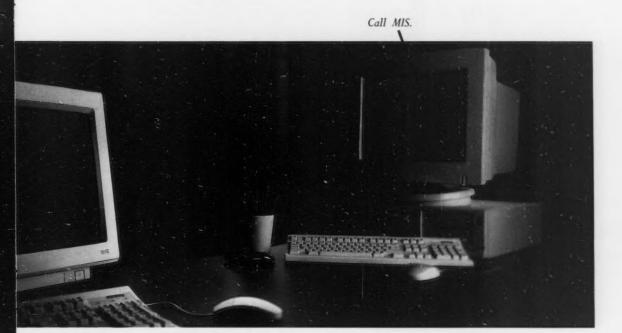


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Users may not dance to Castanet rhythm

Most corporate IS

departments only

occasionally need

to update soft-

ware, which can

he done with

more convention-

al technology, us-

thousand people.

By Frank Hayes

Can Java deliver the goods? Marimba. Inc. is beta-testing a Javabased system for distributing software and data across the Internet and corporate networks. While not without its appeal, the system might be overkill for most organi-

The new system, Castanet, was designed to let users automatically download undated content from interactive games to constantly changing marketing material on the World Wide Web. But for corporate information systems shops, its strongest appeal could be for delivering new versions of application software across corporate networks, according to the Palo Alto, Calif., com

"This has pretty profound implications for the MIS director who's a little hit tired of having to reinstall the operating system or applications every time a new version or bug fix comes in," said Karl Jacobs. CEO of Dimension X. Inc., a Web site producer in San Francisco that is testing the

But Castanet was designed for undating many users across the Internet and hence might be too much for corporate sites with more modest distribution needs.



Realty Highway's Greg Colbert uses the more traditional Visual Rasic for software updates

Message-oriented

middleware

ers said. "It's not a very hard problem to figure out how to service a workgroup of a few hundred or even a

> There's groupware for that, using the Internet or Lotus Notes or whatever," said David Bernstein. a vice president in the advanced technology group at AT&T Corp.

in San Jose, Calif., another Castanet beta site.

Not that big a deal

The process of keeping people up to date isn't overwhelming," said Greg Colbert, vice president of operations at Realty Highway, Inc. in Honolulu. His company built an automatic self-updating capability into a new Visual Basic application, using more conventional technology.

"If the update is only a version or two, we just download the changes," he said.

Although it may be more than most corporate users need for application updates, some IS shops might find Castanet useful for updating rapidly changing information, especially data that will be shared with mass-market custom-

"We're interested in very largescale applications for our subscribers - think AT&T-size." said Bernstein. "That takes a system that can scale to very large numbers of users."

Castanet is written in Java, Sun Microsystems, Inc.'s Internet language, so it can run on virtually all desktop platforms.

Users will run a Java application called a tuner to connect to a server and download new material. The system will cost between \$995 and \$15,000 when it ships later this year, depending on the number of users and configura-

Peer Logic lets applications communicate through Pipes

Firm gets patent for technology to send messages across platforms

By Michael Goldberg

Although the technology is still quite young, signs show that message-oriented middleware is starting to grow up.

The latest rite passed was the recent patent award to Peer Logic, Inc. for its Pipes middleware, which users and observers say of-

fers the scalability and availability required by widely distributed applications.

Message-oriented middleware allows an application to send a

data message to another application running in a different computing environment.

The message could be a request from a PC-based application for data from a legacy system. This means application developers don't have to write new communications code so mainframe applications can send and receive data from computers that run Unix or

Pipes places a software kernel on each client and server in a network. Each kernel then communicates with the other kernels about

availability its and what services it provides. If one server fails, the network

of kernels reroutes application requests and other programming information (see chart). This "selfhealing" feature is the core of Peer Logic's patent.

Analysts said this technology could complement, not compete with, more-established directorybased products such as IBM's MQSeries. At the same time, analysts said Pipes faces an uphill marketing fight because only leading-edge shops are tackling message-oriented middleware.

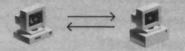
But that seems to be changing. Early this year, Digital Equipment Corp. touted its DECmessageQ product as a bridge between IBM mainframes and Digital servers.

And IBM's MQSeries has started to attract tool offerings from systems management software vendors to help users handle growing networks of applications [CW, Sept. 16].

Application developers at Blue Cross/Blue Shield of Oregon have used Pipes middleware since 1994 to help customer service representatives who use PCs to access information on main-

Down the pipeline

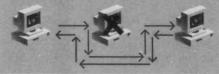
Pipes places a software kernel on each client and server in a network



Each kernel communicates with every point on the network about its availability and the application services



If one kernel fails or is removed, the network of kernels ids an alternative route for the needed programm information. Rerouting messages also can happen when users relocate a kernel or add a new kernel.



Wall Street **CONINUED FROM PAGE 51**

lates in his head for the different rules mandated by the firm," MacIlwaine said. "With the Java application, we've already built a validation server. When an order

comes in to the server, we can tell if they've passed validation - or if not, why they haven't. ... That probably cuts brokers' time by 50%

Tracy Corbo, an analyst at International Data Corp. in Framingham, Mass., said financial firms are moving toward Java but haven't deployed many critical applications on it yet. "That's clearly what they're looking to, though,"

Mark Luppi, senior vice president at New York-based Lehman Brothers, Inc., said it will be a year or more before Java-based mission-critical applications appear on Wall Street trading floors. But now is the time to start developing them, he said. Luppi, who focuses on Lehman's computer architecture, said he wasn't speaking for the firm as a whole.

Luppi said he is considering replacing C++ applications on the trading desks. "It's the technology of the Internet," he said. "We see the Internet and the desktop merging over time. The language for that will be Java. For us, there's nothing else."

frames, HP 3000 minicomputers and Unix servers.

Blue Cross found it could distribute information from disparate systems to 200 customer service representatives and save its customers time and money on staff training, said Kip Stevenson, manager of systems development at the health plan organization in Portland, Ore. The end users learned one graphical user interface instead of several, thereby reducing training costs, he said

Building such applications is a prime benefit of message-oriented middleware, but Stevenson said Pipes' scheme for routing messages in case a server fails helps keep applications running. "It knows which Inetwork nodes lare conducting which functions. And if one particular node or server becomes dysfunctional, it knows which others can take the workload," he said.



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The Enterprise Network

Briefs

AS/400 manager NetTech, Inc. last week introduced software that can help combine management of IBM AS/400 systems with the leading network platform. EView/ 400 provides a graphical user inter face for managing AS/400 network environments from the Network Node Manager console of OpenView from Hewlett-Packard

Co. Later this year, Net-

Tech, in Raleigh, N.C.,

plans to add support for

IBM's NetView for AIX console, Cost is \$2,000 The per AS/400 and \$5,000 per management console.

wireless E-mail

WorldCom, Inc., a

global network based on Lotus Development Corp.'s Notes, is beta-testing a wireless electronic-mail access service. Wolf Communications Co., which runs WorldCom, will use Motorola, Inc.'s Air-Mobile software and Ardis Co.'s wireless network. The service will be generally available by vear's end.

VMS tied to 'net

Cisco Systems, Inc. 4.0 of its MultiNet for OpenVMS software. which lets users tie Digital Equipment Corp. VAX and Alpha-based systems to corporate IP networks and the Internet. The new version includes enhanced network printing and file services software and Dynamic Host Configuration support, which lets users share IP addresses. Release 4.0 is available starting at \$37,000 for a 25-system license. It can be used for mixed VAX/Alpha platform sites.

New tactics expand WANs

Users lobby carriers, build their own

Backbone

networks

By Bob Wallace

Although it is commonplace for IS managers to run campus backbone networks at 100M, 155M and even 622M bit/sec., it isn't common to find carriers that offer pipes that fast to link the dispersed sites.

As a result, the wide-area network becomes a bottleneck for information systems managers who build enterprisewide networks.

That forces them to become savvy negotiators, if not construction engineers, to deal with the predicament.

They have two options: They can persuade their carriers to build backbone networks with bandwidth greater than the 1.54M bit/sec. of a T1 line or the 45M bit/sec. of a T3 link, or they can build their own high-speed backbone.

Bob Yannocone chose the first option for Pace University in New York. The school wanted an Asynchronous Transfer Mode (ATM) backbone network to link its six campuses, but its carrier, Nynex Corp., didn't plan to offer ATM for another one to three years.

Yannocone, manager of operations and network administration at Pace, persuaded Nynex to install 40 miles of fiber to link the campuses at 100M bit/sec. Fiber Distributed Data Interface (FDDI) speed.

"We were happy with the reliability of the T1s we had between sites, but we just didn't have

enough bandwidth," Yannocone said. "And we realized that the FDDI approach would cost less than adding

more T1s or even installing multiple T3s."

The liberal arts university still

The liberal arts university still intends to move to ATM. "We structured our contract so that we can upgrade to ATM when it becomes available from Nynex without penalty," Yannocone said. Officials at one Pace department would like to use ATM to support a distance-learning application.

Many users — including Union Pacific Railroad Co. — have gone

with the second option.

The railroad is moving toward deploying 100M bit/sec. Fast Ethernet at some of its largest offices. It has fiber linking many of its far-flung offices and runs numerous T1s over the links.

"We're responding by turning up a 45M bit/sec. ATM connection on the fiber between data centers in our headquarters in Omaha and a large office in St. Louis," said Brett Frankenberger, a telecommunications engineer at Union Pacific. "We find this to be a more attractive alternative to going with the carrier option. We can up the speed on its fiber by

upgrading the switching gear on either end of the links."

Outsourcing giant Computer Sciences Corp. (CSC) is headed down the same track as Union Pacific. CSC, the prime contractor for NASA, decided to move to its own ATM network to link highspeed networks at several farflung sites.

"Å conservative estimate showed we would save roughly 30% [on monthly WAN charges] by going with ATM instead of 15 T3s," said Steve Fall, a systems scribist at CSC in Huntsville, Ala. The private network approach can

Bottlenecks, page 64





Allen Lund Co.'s Ken Lund says his family's firm is 'the absolutely ideal company' for voice over frame relay

Voice over frame connects

By Kim Girard

At a time when many network managers are just starting to ask questions about how voice over frame relay works, Ken Lund has been there, done that.

A year and a half ago, Lund, network integrator at Allen Lund Co., his family's truck transportation brokerage in LaCanada-Flintridge, Calif., was considering a circuit upgrade from 9.6K to 56K bit/sec. to handle increasing data traffic on the company's network.

Instead of upgrading the circuits, Lund decided to move to a frame-relay network. He found it hard to pass up the estimated savings of about \$6,000 per month on a \$45,000 bill for data services. Integrating voice on the frame-relay links would enable the company to save another \$1,500 to \$2,000 per month by eliminating per-minute phone charges and the cost of multiple line connectivity, he figured.

So officials at the company, which uses MCI Communications Corp. as a carrier and Micom Communications Corp. data and voice integration products, decided to deploy voice over frame relay to connect its 13 sites, which sprawl from Orlando, Fla., to Vancouver, British Columbia,

and employ 100 people. Because potential savings were so enticing, Lund said, the company completed the entire \$7,000 installation in three months, doing the bulk of the work itself.

"We are the absolutely ideal company for [voice over frame]," Lund said. "We're spread out. We don't do a high volume of data."

But voice over frame relay is "a happy accident" that doesn't work for everyone, said Tom Nolle, president of CIMI Corp., a telecommunications consultancy in Voorhees, N.J. The service is only as cheap as the carrier's frame-Voice over frame, page 64

NetWare managers get relief

Load taken off for managing NetWare Loadable Modules

By Patrick Dryden

Managing many servers based on Novell, Inc.'s NetWare is about to get a lot easier, according to beta testers of a tool that NetPro Computing, Inc. is expected to ship this week.

Config Central provides a way for administrators to scan their servers to find out which Net-Ware Loadable Modules (NLM) reside there, in memory and on disk. It can then update those vital programs according to a central reference server so that each system has the correct version.

Such distribution capability spells relief for NetWare administrators because they must log in to servers, individually and frequently, to fiddle with dozens or even hundreds of NLMs.

"Managing NLMs is a full-time occupation for those of us with hundreds of servers," said beta tester Scott Sattler, a server consultant at Cargill, Inc. in Minneapolis. New network management tool

Config Central, NetPro Computing, Scottsdale, Artz.

- Config Central simplifies the management and distribution of NLM programs on multiple servers running NetWare 3.12 and 4.1.
- Instead of logging in to each server to examine NLMs, managers create a reference model of the desired configuration so Config Central can search servers for comparison. Managers can then update old NLM versions and fix problems.
- Shipping this week, starting at \$499 for 10 servers.

Administrators at the agricultural supplier spend between 30 minutes and one hour updating NLMs on each of 500 servers worldwide, and the patches or new versions arrive weekly, Sattler said. Novell's ManageWise helps report on NLMs, but it doesn't help distribute them, he eaid

"Some companies just leave NLMs alone until the server crashes. But now there's an easy way to keep them up to date," Sattler said. "There's nothing else out there that can push NLMs out to servers pretty much automatically."

At a financial firm that has nearly 200 NLMs running on some of its hundreds of NetWare servers, "we have a big problem tracking which ones have both the correct version number and date for each file," said the beta tester, who asked to remain anonymous.

Novell provides the site with some custom tools to help manage NLMs, but those still require administrators to work server by server, the beta tester said. "Config Central will give us the ability to be more proactive because we can screen multiple servers against one reference configuration," he said.

After installing, modifying and updating NLMs on this reference server, administrators let Config Central scan the rest of the Net-Ware 3.12 or 4.1 servers. The tool highlights unexpected or outdated NLMs, builds reports and can then update files from the reference or let the operator trouble-

Autopilot

shoot the configuration.

"Twe been looking for something more automatic than manual for a long time," said beta tester Andy Von Der Bruegge, a computer information specialist at the Missouri Department of Health in Jefferson City.

"Now I can set up push/pull distribution of new NLMs and quickly configure the NLMs on new servers we install." he said.

Server management tools from BindView Development Corp. in Houston help check on NLMs but can't automate updates or generate reports easily, Von Der Bruegge said.

Other NetWare users are eager to evaluate Config Central.

Network administrator Johnny Olivas created batch files to automate the distribution of NLM updates to 180 servers throughout Phillips Petroleum Co. in Tulsa, Okla. "But I'd rather manage servers without having to deal with them individually," he said.

At Buck Consultants, Inc., a benefits consulting firm in New York, systems programmer Clem Bowen must run reports on 45 servers, then compare them to check NLM versions. "Any way that cuts down the work we do now server by server will be a big help," he said.

NetPro Computing, in Scottsdale, Ariz., has set Config Central's starting price at \$499 for 10 servers.

Voice over frame

CONTINUED FROM PAGE 63

relay tariffs and can be used only internally because the public won't tolerate the voice quality, he said

CD-quality sound

Lund said voice quality on the network is much improved since the company upgraded five months ago to a Mic-

Frame

relay

om ClearVoice system. Simi Valley, Calif.-based Micom claimed the new sys-

tem delivers the quality of the public telephone system at 8K bit/sec.

"It's like going from tape to CD," Lund said. "They've just cleaned it up."

Monitoring and tracking

To monitor phone performance on the network, Lund listens in at times. He also uses Micom's PC-based software, Netman, to track incoming and outgoing calls. Daily reports show that 95% of calls connect successfully, he said. When voice traffic gets heavy, Lund adds to the company's multiplexer cards that provide more capacity to keep the system running.

The company uses one Unix system to book more than 4,000 truckloads for customers monthly. Employees use the system for all invoices and order confirmations.

Coordinating the lines and equipment from a local telephone switch that connects to a long-distance line and back to a T1 line on the end of one of the company's branch offices was a challenge. Lund said.

"One thing wrong anywhere in that chain, and you don't get a connect," he said. "It's very hard to troubleshoot in the beginning. But once it's configured, I can connect anything."

Vendors turning to directories

By Tim Ouellette

Electronic-mail integrators and vendors are catching on to the fact that users want simple and centralized directory services.

To that end, Control Data Systems, Inc. has unveiled a suite of security, messaging and information access products, called Rialto, around its X.500 directory.

And Enterprise Systems Ltd., a vendor of Internet-based E-mail systems, later this month will outline plans for a directory services product line.

Users stand to gain because they can reduce the number of directories they maintain for E-mail, database applications and network resources and still have nearly universal client access to the directory from almost any type of application.

"To me, the directory is the foundation for doing all sorts of things" beyond E-mail, said Lee Croatt, director of U-Card Information Systems at the University of Minnesota in Minneapolis.

The school has created an

Where can I find...?

Uses for Rialto's directory services

Looking up white pages information

Messaging

Security

Process control for applications such as workflow

Information engines

Meta directories

Network resource

X.500 directory with Control Data's help, and Croatt said packaging the various services was a good move.

Control Data, in Arden Hills, Minn., has long been an integrator of diverse E-mail systems. And the X.500 Internet standard for structuring directories has been a major focus for it.

The product comes at the right

time, some observers say. According to the Burton Group, a research firm in Salt Lake City, directory services will become one of the most pressing technology issues for users over the next three to five years.

For example, after installing the directory for E-mail, "all of a sudden we had other things we wanted to do with it beyond using it for E-mail." Croatt said.

- The Rialto suite includes:

 The Control Data Global Directory Server.
- Security rules entered into the directory.
- IntraStore, a message storage server, and MailHub, a message integration server, set to be upgraded later this year.
- Info-Engine, software that tracks user-defined information needs and searches for that information on the network with the help of the central directory.

Enterprise Solutions, in Westlake Village, Calif, is expected to outline some of its directory plans at the Internet Expo in Boston

Bottlenecks

CONTINUED FROM PAGE 63

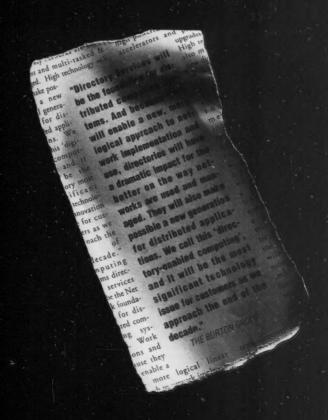
be easier than dealing with local and interexchange carriers — for long-distance networks.

But not all users need 100M bit/sec. or higher WAN links, though many are headed in that direction.

"The wide area is always the bottleneck, which is why we're upgrading our entire leased line network to public frame-relay service," said Rob McKenna, telecommunications manager at Sumitomo Bank Ltd. in New York. The company runs switched Ethernet on its campuses and is just now beta-testing Fast Ethernet products.

The frame-relay network comprises 256K bit/sec. links to Sumitomo's offices in New York, Hong Kong, London and Tokyo. The firm previously used 64K bit/sec. private lines. "Adding leased lines is a more expensive alternative," McKenna said. "Frame relay gives us the ability to burst when we need additional bandwidth without paying for all of it."

OKAY,
SO THIS IS THE FUTURE
OF THE ENTERPRISE.



wireless digital

and Mindy Blodgett

AT&T Corp. has announced a nationwide wireless digital cellular service that will position the company as the biggest provider for road warriors who demand roaming cellular service.

AT&T's wireless service, Digital PCS (personal communications services), is available in 40 cities across the U.S.

It is based on the company's 850-MHz cellular network. The Digital PCS name refers to enhanced paging, messaging and electronic-mail services the company offers with its new digital cellular telephones. But the service is unrelated to the PCS digital network AT&T is building.

PCS predictions

There will be 62 million cellular/PCS subscribers and 55 million paging subscribers by 2000

Between 2001 and 2005. cellular/PCS will grow enough to be considered an alternative to traditional telephony

24% of 871 noncellular users surveyed said they wished they had some form of wireless technology

AT&T paid \$1.6 billion for PCS licenses at the Federal Communications Commission auction last year. Those licenses are based on the 1,900-MHz PCS frequency. Services offered on the two frequencies - voice, paging, short messaging, Caller ID and voice mail - are expected to be nearly identical.

AT&T next year plans to offer a dual-band, dual-mode phone that will operate on both frequencies and potentially reach 212 million

AT&T's use of the PCS label in reference to its cellular network confused some customers and analysts. But AT&T Chairman and CEO Robert Allen argued that "consumers really don't care about frequencies; they care about services.

"It's a lot of hype," said Jeffrey

Kagan, president of Kagan Telecom Associates in Atlanta

"It seems as though they're trying to counterstrike Sprint's success with PCS" in the Washington area, Kagan said.

Pacific Bell also offers a 1,900-MHz service in San Diego. Other companies that plan offerings for later this year include Primeco Personal Communications and a joint venture between Bell Atlantic Nynex Mobile and AirTouch Communications, Inc.

Mass launch

The AT&T rollout in 40 markets simultaneously is much more powerful than the city-by-city introductions of competing carriers, observers said. AT&T's digital cellular service packages start at \$24.99 per month, with a nationwide roaming fee of 60 cents per minute. Some users said that price was a bit high. The price for a phone starts at \$150.

George Vasquez, director of information technology at Saint Agnes Medical Center in Fresno. Calif., is testing the phones before he buys them for nurses, pharmacists and other staffers who need to relay information about medication, treatment and other patient needs.

'Now the people [have to carry] both cellular and pager," Vasquez said. "But this new phone may change that so we don't have to have both."

"The main reason I switched over is that the digital system saves a lot of my time," said Brad Gooding, a certified public accountant in Dallas. He ditched his analog phone for the AT&T phone. "I'm not calling my answering machine or my answering service, and I don't have to have my beeper," he said.

Analysts said confusion between the two AT&T PCS services is likely to persist. Complicating matters, AT&T's Wireless Services has been championing Cellular Digital Packet Data (CDPD), a wireless data transmission technology that is an overlay on voice cellular networks.

CDPD offers more data transmission capabilities than PCS or digital cellular, which will be little more than paging, said William Frezza, an analyst and consultant at Wireless Computing Associates in Yardley, Pa. But CDPD has been slow to catch on.

AT&T rolls out | Bay extends switching line

Low-cost Ethernet switch included in deluge of products

By Bob Wallace

Bay Networks, Inc. last week unveiled its lowest-priced desktop Ethernet switch, at \$217 per port, just a week after 3Com Corp. rolled out a similar switch at \$120

The BayStack 301 Desktop Ethernet Switch was among a raft of products announced by Bay in the past two weeks, including many offerings that will let users build more robust and flexible wide-area corporate data net-

The products include shared Fast Ethernet modules for Bay's System 3000 and System 5000 hubs, a feature-rich branch-office router, hardware-based compression and a router configuration package.

Power boost

Bay addressed a void in its router line with the Advanced Remote Node (ARN), a branchoffice router that includes a more powerful processor than its pre-

The router includes up to two LAN and five WAN links.

Base pricing for an ARN with one Ethernet link and two serial ports is \$2 195

Description:	Branch-office router	
Base configuration:	One LAN interface (Ethernet or Token Ring), two synchronous WAN connections	
Maximum configuration:	Two LAN, five WAN interfaces	
Processor:	Motorola 68040 and 68360	
Software bundled:	Bay's BayRS routing software	
Base price:	\$2,195	
Availability:	November	

It will ship next month.

"Before the ARN, there was a jump in price from its \$3,000 lowend router to \$10,000 for the next larger model, which means they're filling a key gap for us," said Eric Ferguson, a network engineer at Maryland Insurance Group in Baltimore.

"The ARN's support of legacy protocols would make it a great fit

for at least the 20 offices where we have lots of PCs using terminal emulation. We wouldn't

need the emulation with the ARNs," Ferguson said.

LAN/WAN

The ARN will "fare particularly well with Bay customers, but other users will find that competing products from 3Com and Cisco cost less," predicted John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass.

New compression hardware will allow some Bay products to boost data rates from 2M to 16M bit/sec. over private lines, frame relay and Integrated Services Digital Network lines.

"With Bay's compression, we can support 2-to-1 compression at remote sites and cut our WAN costs by 30%," Ferguson said. The hardware is available now. Pricing starts at \$3,000.

Bay also won analysts' praise for ControlCenter, a graphical package that lets network administrators configure and download software to groups of routers instead of one router at a time.

The old process is timeconsuming for large corporations with dozens of far-flung sites.

Bay booster

"This is a differentiator for Bay that 3Com and Cisco can't quite match," Morency said.

"And it's a big boost for Bay, which had been lacking in configuration management," he said.

The BayStack 301 Desktop Ethernet switch includes 22 switched Ethernet ports and two switched Fast Ethernet ports. It costs \$4,795.

The Fast Ethernet modules for the System 3000 range in price from \$1,995 to \$2,495.

The switch and modules are available now: the module for the System 5000 will ship next year.

Computerworld has learned that Bay also will announce the Bay-Stack Token Ring Hub, a 24port hub for its BayStack line of stackable networking products.

The hub will be available with many levels of management capability. Pricing will range from \$2,795 to \$6,495.

Bay also will announce that its Centillion 100 LAN switch will be integrated in its Optivity line of management packages by January, said sources briefed by the

Lightweight **ATM** analyzer is introduced

By Patrick Dryden

Net2Net Corp. last week launched a portable ATM analyzer that is small and inexpensive enough to deploy throughout an organization that needs to build and maintain cell-switching Asynchronous Transfer Mode (ATM)

CellBlaster LT is 1.5 in. thick, weighs four pounds and connects to an Intel Corp. Pentium-class lapton. It costs \$19.995.

The Hudson, Mass., vendor entered the market a year ago with a luggable version that cost \$35,000. The first ATM analyzer from Hewlett-Packard Co. was the size of a file cabinet and cost more than \$100,000. But network man-



NetaNet's CellBlaster LT weighs just 4 bounds

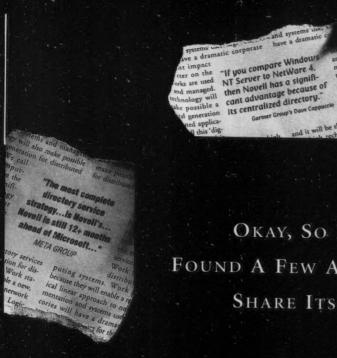
agers said they need a dual-

purpose analyzer that they can as-

sign to field-service technicians

and install as a remote monitor. CellBlaster LT connects to a laptop or ATM switch by Ethernet for over-the-network manage-

ment. Or it can be monitored outside the network via modem or Integrated Services Digital Network connection. From a Windows NT or Windows 95 console, operators can capture cells at the full speed of a 155M bit/sec. ATM circuit.



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VetWare 4's mon is driven in part by customers' demand tworks anaged. also make for NDS ... NDS provides leading eneration ations. We directory services for ing', and it distributed neworks." st signifiinnovation Lee Doyle, IDC approach the end

OKAY, SO NOVELL. FOUND A FEW ANALYSTS WHO SHARE ITS VISION.

> BUT THAT DOESN'T MEAN REAL WORLD CUSTOMERS WILL.

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Most notably, IT Server lacks a comprehensive directory service. By contrast NetWare provides most of the capabilities necessary in a large-enterprise network operating system - especially in Novell Directory Services (NDS)."

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Utilities aim at phone business

Electricity providers enter the fray in bids to offer telecommunications services

By Kim Girard

Electric utilities across the nation - flush with extra network capacity and rights-of-way for fiber cables - are joining the rush to capture telecommunications customers in the deregulated market.

The latest utility entry is Bos-Edison Co., which recently announced an alliance with cable and tele-

communications firm RCN. Inc. to offer bundled voice, data and Internet services.

Elsewhere, Entergy Services, Inc., a utility in Gretna, La., plans to offer telecommunications services. And Northeast Utilities in Hartford, Conn., and Central Maine Power Co. in Augusta. Maine, have formed subsidiaries to invest in FiveCom. Inc., which is building a fiber-optic network in New England.

Boston Edison boasts 200 miles of fiber-optic cable for communications between its power plant and transmission stations. RCN will use that bandwidth to provide

bundled services that customers can order on one bill.

The venture initially will target multifamily dwellings, but Boston Edison officials expect to soon add business users to the target market.

The Boston Edison/RCN venture is building a \$300 million data network to offer customers an array of services, including cable television. Internet access and local and long-distance phone services. Customers eventually will be able to use the network to order electricity and monitor home security and heating/cooling systems.

New faces

But Chris Landes, a mobile and enhanced services consultant at TeleChoice, Inc. in Verona, N.J., questioned whether utilities have enough name recognition to compete with traditional carriers, which themselves are being forced to compete more aggres-

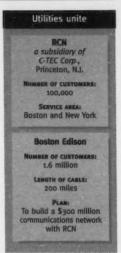
Utilities such as Boston Edison

will need to break free from their slow-moving bureaucracies and find a savvy partner to avoid culture shock in the networking market, analysts said

One user said he doubted his company would switch to a utility for networking services, even though he is dissatisfied with traditional carrier Nynex Corp.

"I haven't looked at [a utility] vet," said Andrew Stratford, a vice president at Congress Financial Corp. in New York.

The conservatism of the banking industry would make it very difficult for me to go to an alternate carrier," he said.



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I certify that the statements made by me above are correct and complete.

ADC Kentrox has announced MagnumPlus, a broadband access multiplexer.

New Products

According to the Portland. Ore., company, MagnumPlus integrates and transports voice, video and data onto T3/E3 or OC-3 public and private backbones. It was designed for 10M bit/sec. throughput.

Pricing starts at \$10,000.

ADC Kentrox (503) 643-1681 www.kentrox.com

ChatCom, Inc. has announced a family of enterprise servers, the ChatterBox Corporate Series and Office Series

According to the Chatsworth, Calif., company, one platform consolidates many Intel Corp.-based CPUs within a single rack-mounted enclosure to enhance maintenance and scalability.

Pricing starts at \$1,460 for an Office Series Model 204.

▶ Chatcom (818) 709-1778 www.ilchatcom.com

Citadel Computer Systems, Inc. has released NetOff 5, an automatic log-off software pro-

According to the Houston company, NetOff 5 saves unattended open files in 32- and 16-bit applications before automatically logging off. It prevents unauthorized access to workstations and corrupt backups caused by open files. It monitors a communications port and treats the carrier tone or data transfer as activity.

NetOff 5 has an Instant Logoff feature that lets users log off the system by clicking an icon.

It can also be configured by a network administrator to automatically close an individual workstation, a group of workstations or the entire system

NetOff 5 costs \$499. It requires Novell, Inc.'s NetWare 3.x or Net-Ware 4.x or Microsoft Corp.'s Windows 3.1, Windows 95 or Win-

► Citadel Computer Systems (713) 686-6400 www.citadel.com

Sourcecom Corp. has delivered Banc 6000 DSlam-Plus, a LAN/ WAN frame and cell switching and routing access platform.

According to the Westlake Village, Calif., company, the platform allows construction of Digital Subscriber Line-based public broadband access networks.

The Banc 6000 base unit with 32 WAN ports is priced at \$19,950. The DSlam-Plus firmware costs \$950

Sourcecom (818) 735-3500 www.sourcecom.com

Racal-Datacom, Inc. has announced the TrustMe Authentication Server to provide secure access control for the corporate LAN or enterprise network.

According to the Sunrise, Fla., company, the server uses tokens that support Radius and Tacacs authentication, authorization and accounting services.

Pricing starts at \$1,695 for software and a license for 50 users.

► Racal-Datacom (954) 846-1601 www.racal.com

Xvlan Corp. has announced OmniSwitch and PizzaSwitch, LAN switches that offer framerelay access.

According to the Calabasas, Calif., company, the products allow enterprise connections from major campuses to regional offices, especially those that need higher-performance servers where the LAN switch replaces the hub and the router.

Pricing starts at \$5,500.

Xylan Corp. www.xylan.com

Larscom, Inc. has announced the IMUX-A45, an Asynchronous Transfer Mode (ATM) Imux Module for the Orion 4000 Broadband Access Multiplexer.

According to the Santa Clara, Calif., company, the module allows network users and others to inverse multiplex ATM cells over standard T1 lines bit by bit to create a clear channel for ATM traffic

Pricing starts at \$11,950.

Larscom (408) 988-6600 www.larscom.com

Verity, Inc. has announced Search'97, a family of products for deploying search applications across an enterprise.

According to the San Francisco company, Search'97 integrates a search engine with intelligent search components. Search'97 Personal works with an information and agent server.

Pricing starts at \$1,995 per server for enterprisewide deploy-

▶ Verity (408) 541-1500 www.verity.com

the netwo does the work. Without NDS, generation ned applica-all this 'digi-I do the work." ENGNEER

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at http://domino.lotus.com.

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Server-Based Java & Javascript	Ves	No	No
Native Support For Oracle, Sybase, Informix, & ODBC	Yes	ODBC Only	ODBC Only
Cost w/1,000 Clients	\$36,900	\$182,018	\$73,590

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NETSCAPE

Notes-based program may facilitate long-distance training, 76

The Internet

Playbill webmaster trades footlights for 'net sites

By Mitch Wagner

ndv McGibbon is hardly the first small-town boy to become a big star on Broadway. But McGibbon's name isn't in the bright lights of the Great White Way -- it's on the brightly lit pixels of the information highway.

McGibbon came to New York City 14 years ago, a teen-ager from upstate New York with a few years of acting training under his belt and a hankering to be a star. Now the 32-year-old is webmaster at Playbill Online (www.playbill.com), a World Wide Web site devoted to promoting live theater and selling theater tickets worldwide.

The transition from theater pro to webmaster came quickly to McGibbon. In December 1994. when looking for a career change after years of working backstage on Broadway, McGibbon bought a book about the Web. Soon, he created his own site. By last February, he had a job at Playbill.

"It was a whole new career for me - in five weeks and 800 pages," McGibbon said.

McGibbon may have succeeded as soon as he hit the Web, but it was only after he gave up his dreams of being a star on Broadway, "I basically could see there were too many people in the industry who wanted it more than I wanted it," he said. "To succeed in this business, it's got to be the only thing in life that you want."

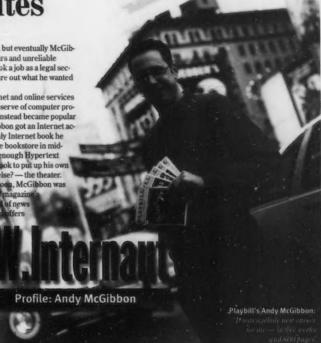
So McGibbon worked behind the scenes as a stage manager and theater general manager. That lasted for more than a decade, but eventually McGibbon grew tired of the long hours and unreliable workload of theater life. He took a job as a legal secretary in 1994 and tried to figure out what he wanted to do with the rest of his life.

Around that time, the Internet and online services ceased to be the exclusive preserve of computer professionals and hobbyists and instead became popular among regular people. McGibbon got an Internet account. Later, he bought the only Internet book he could find in a Barnes & Noble bookstore in midtown Manhattan. He learned enough Hypertext Markup Language from the book to put up his own Web site, devoted to — what else? — the theater.
The site got rave reviews. Soon, McGibbon wa

offered a job directing Play site, which has a daily live fe about the theater busin

tickets and information about listings in 3 000 the aters nationwide. McGibbon said

he hopes to expand the site to include seating charts and possibly use the Virtual Reality Modeling Language to help theatergoers choose their seats



Scotia spreads stock information more quickly via intranet

By Kim S. Nash

sions.

Nowhere but in the stock market is time so much equated with money. Slicing a day off the process for distrib-

uting expert stock opinions to investors can mean more money all around; stock buyers could see more profits, and brokers could see more commis-

Scotia Capital Markets did just that this past summer. The Toronto-based investment firm built a 2.500-user intranet that analysts across Canada use to continuously update their stock evaluations



Scotia's Diane Urquhart says intranets are vital to the investment firm

immediately to brokers, traders and other salespeople who buy and sell shares and other investment services Employees can access this research al-

throughout the day. Reports are available

most as quickly as analysts write it, rather than having to wait for updates or hard-copy reports.

Previously, Scotia Capital used a 10-year-old, proprietary application that, at best, allowed for only once-daily updates and then only to some employees. Others had to wait for

The old system "met all the regulatory requirements, but it wasn't accesbased on news and market movements sible to everyone and didn't do a lot of

managing director of equity research.

For example, research reports previously couldn't include detailed graphics or the use of color.

Risky rollout

Scotia Capital's effort wasn't your typical first-timer intranet application.

Most companies tend to start with simpler stuff, such as telephone directories, newsletters or human resources applications. These are generally static lists of data that end users can scan or

But Scotia Capital's intranet handles data that is key to the business.

"In a cereal company, intranets often just provide goings-on inside the company and other simple things like that. But

this is vital to us," Urguhart said.

Scotia was smart to tackle this kind of project, said Walid Mougayar, president of CyberManagement, Inc., a consulting firm in Toronto.

They will see more return on investment because this is an area that affects customers and revenues right away," Mougayar said.

Scotia Capital's intranet costs weren't high, said Gail Smith, vice president of front-office development at the investment firm.

This is partly because rebuilding the analyst report application was a separate project from the intranet work.

Also, the company already had a TCP/IP wide-area network and a few thousand PCs and Unix workstations in place. Smith declined to specify the final cost but said the only outlay was for Net-

Scotia, page 76



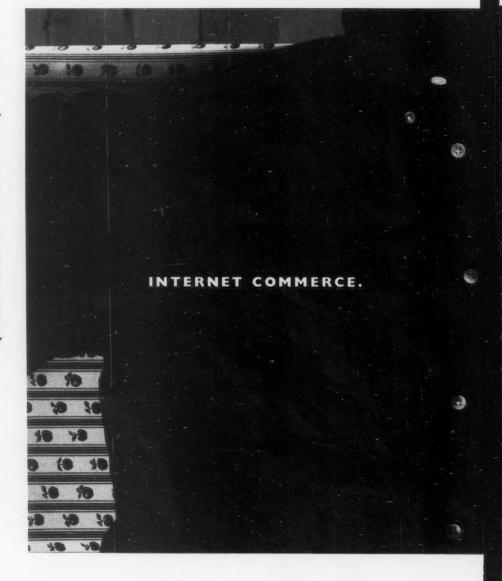
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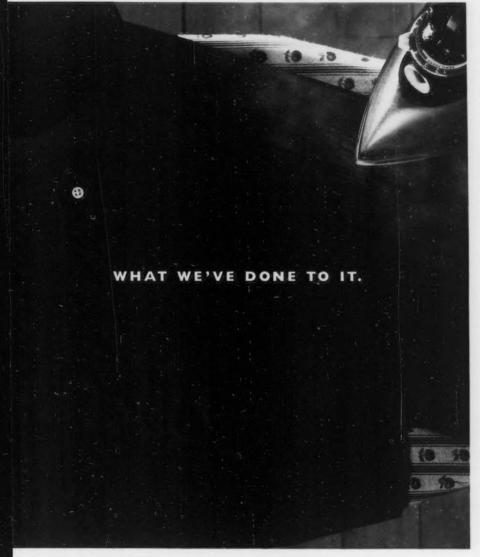
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Commentary

Encryption confusion

Gary H. Anthes

"Clinton ends bitter fight over encryption" - The Washington Post. Oct. 1.

"White House plan spurns computer industry" - San Jose Mercury News, Oct. 1.

What we have here is a failure to communi-

Those contradictory headlines refer to the recent White House announcement that it would relax controls on the export of encryption products.

Scotia

The federal fracas over encryption began in 1994 when the Clin-

CONTINUED FROM PAGE 73

scape Communications Corp, soft-

ware. Netscape's SuiteSpot server

bundle is \$3,995; its browser costs

Future intranet plans include

building workflow applications,

such as expense forms and pur-

chase orders. Also on Scotia Capi-

tal's list of technologies to try are

Internet devices or slim PC-like

about \$79 for a single copy.

ton administration unveiled an idea so breathtakingly flawed that the White House has yet to recover, despite having made major concessions for which it gets little credit.

Remember the Clipper chip? It was intended to offer users unbreakable encryption while preserving the ability of law enforcers to wiretap the coded conversations of criminals and terrorists.

Clipper was hardware - strike one. It used a secret algorithm known only to the National Secu-

In theory, maintenance costs

rity Agency - strike two. It required users to give their secret encryption keys to the federal government - strike three. Clipper was out.

But Uncle Sam is nothing if not persistent. The administration's idea has evolved into softwarebased encryption that uses standard industry algorithms with user-selected third parties - or even users' companies - holding

Through three iterations, the administration has moved a long way toward meeting the criticisms of users and privacy advocates. Calling this "Clipper III." as some of its critics do, is like comparing a Ferrari with a Model T.

The debate over the concept of government as code-cracker hasn't been helped by the failure

of law enforcement to make its case. I have attended any number of conferences on this topic at which no cop stood up - perhaps none was invited? - to warn us about the technologically empowered bad guys.

And speaking of failures to communicate, take IBM, which recently teamed with 10 companies to develop technology for a "key-recovery" system intended to satisfy the new export criteria.

Through some mysterious process, the scheme will allow the government to get encryption keys when it needs them, without having to hold them "in escrow" - the Clipper approach.

Why "mysterious?" IBM's press release announcing the initiative was four pages of selfcongratulatory drivel with almost no information about what the companies would develop or how it would work.

Reminded of the secret Clipper algorithm, I sought details from IBM. I asked a spokeswoman why the company hadn't just put out a nice, snappy white paper explaining its new approach to key recovery.

"We spent three months trying to do that, quite literally," the spokeswoman said. "It's pretty confusing stuff, and whenever we get it on paper, we aren't happy with it."

We aren't off to a good start on this latest idea for reconciling the interests of users and law enforcers

Anthes is Computerworld's senior editor of government and security.

Notes-based program may facilitate remote training

for the devices would be lower than for PCs, Smith said. But at least one roadblock must be removed before the firm will use them: a lack of traditional desktop

applications. Internet device proponents say word processors and other packages will be replaced by Webbased alternatives, but it hasn't happened yet.

"And no matter what else users have on their PCs, word processing is what they need," Smith said "

By Tim Ouellette

Corporate trainers soon may get a breather from tight budget resources, thanks to a new Notesbased distance-learning program from Lotus Development Corp.

Cambridge, Mass.-based Lotus last week announced Learning-

Space, a set of Notes databases that lets companies create distance-learning courses based on the Notes groupware en-

But user companies don't have to fully commit to Notes to use LearningSpace. Course developers currently need Notes clients to build courses, but users can get to third-party training courses via any Web browser. The product runs on Domino, Lotus' World Wide Web and Notes server.

A new version due next year will let course developers do everything from a Web browser without having to buy Notes clients

Developers would license the LearningSpace server-based databases, but they could make courses available to users via Web

Cost savings

More important to the bottom line, a distributed, group-training environment lets companies cut costs by creating course work and group discussions without having to rent classrooms, pay for travel

or force students into a specific time frame for learning.

'It really is just-in-time training when employees want [it], not when we give it to them," said John Burrows, assistant to the vice chairman at Buckman Laboratory international, a global chemical firm in **Online courses** Memphis.

"It also levels the playing field for training for our worldwide sales staff," he said.

Currently, Buckman employees may receive different types of training, depending on their loca-

Buckman has only a small group of users in finance departments who now run Notes.

The company will create a training program that will provide consistency across its global sales offices and help absorb the best sales techniques from across the

LearningSpace is made up of five Notes databases - Schedule, MediaCenter, CourseRoom, Profiles and Assessment Manager that can reside on an in-house Notes server or on one of many Notes public networks.

In fact, Lotus is working with online Notes providers such as the IBM Global Network and US West Communications, Inc. to offer LearningSpace hosting ser-

LearningSpace guides trainers through course creation without them having to know anything about Notes programming.

For example, a trainer can create course syllabi, tests and study groups and then post reading materials and videos for students to access, read and discuss.

The system is different from traditional computer-based training (CBT) because it opens up discussion and learning to many participants.

It isn't limited to a particular time frame and can include small CBT modules in Notes format or other formats as part of a larger LearningSpace course.

Graduate classes

Companies such as Buckman could also use it to let employees enroll in graduate or continuing education programs at outside

They want to access the education they need at times and places that are convenient to them. while still having communications with other students and faculty," said Donald E. Hanna, chancellor at the University of Wisconsin-Extension in Madison.

The school is developing an executive MBA program based on LearningSpace in which workers can pursue course work with a Web browser in their home.

The LearningSpace Starter-Pack will be available next month. It will cost \$3,500 and come with a single course developer license and a license to deliver courses to 50 participants at a time.

Larger licenses will also be



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L first multimedia conferencing system that brings together people on different communications devices (e.g., groups on workstations in N.Y. and L.A. can meet with a lucky dog on a cell phone in Aspen). Named Multimedia Communications eXchange or MMCX, for short.

Lifirst software that creates "universal mailbox" using customers' existing servers. Makes e-mail, voice mail, faxes available from any phone or desktop pc. (Letters from Mom still come old-fashioned way.) Ask for INTUITY" AUDIX Integrated Messaging.

L first videoconferencing system with continuous presence, switching among up to 24 sites. (Nearly five times more than other guys' system.) Four sites on screen simultaneously. Named Multipoint Conferencing Unit.

More good ideas where those came from (Bell Labs).

Call former Business Communications Systems division of AT&T. Now Lucent Technologies.



We make the things that make communications work."

New Products

IT Design USA, Inc. has announced Viper Instant-Access with WebLink, an Internet plug-in for companies that are migrating to an intranet environment.

The Cupertino, Calif., company said the WebLink enhancement allows corporate list-based information to be delivered to every network desktop using Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer browsers.

Pricing for the plug-in and three software packages starts at \$11 per user for systems of 5,000 or more users.

► IT Design USA (408) 342-0435 www.itdesign.com

Intermind Corp. has released Intermind Communicator, software that allows World Wide Web users to send and receive only content of mutual interest and still retain anonymity.

The Seattle company said the publishing, subscribing and anonymous feedback system runs over any Web server or network.

Pricing for Intermind Communicator starts at \$195.

Intermind (206) 812-6000 www.intermind.com

LearnKey, Inc. recently released a training series, World Wide Web Page Development Video Guide.

According to the St. George, Utah, company, the guide is a three-course videotape. It offers instructions on how to create Web pages with Adobe Systems, Inc.'s PageMill and Hypertext Markun Language.

The guide costs \$49.95 per course or \$129 for all three.

LearnKey
(801) 674-9733
www.learnkey.com

DeltaPoint, Inc. has introduced QuickSite Developer's Edition, a World Wide Web site creation and management tool.

According to the Monterey, Calif., company, QuickSite Developer's Edition gives Web developers full control over Hypertext Markup Language. The product has 65 features for Web developers, including 3D Web Site Builder, a visual Virtual Reality Modeling Language creation tool.

QuickSite Developer's Edition costs \$295.

DeltaPoint
(408) 648-4000
www.deltapoint.com

Around Technology, Inc. has announced DataHouse CD Port TopSpin, CD-ROM towers to provide embedded World Wide Web servers with support for Web browsers and servers.

According to the Cleveland company, the products permit direct network connection of SCSI CD-ROM drivers to Ethernet or 10Base-T networks.

Pricing for CD Port TopSpin starts at \$2,619.

Around Technology (216) 234-6400 www.aroundtech.com

Integrix, Inc. has announced NS200, an UltraSPARC-based server for enterprises with World Wide Web-based networks.

The Newbury Park, Calif., company said the NS200 is the first in a series. It provides

a wide range of server solutions in standalone or rack-mounted configurations.

Pricing for NS200 starts at \$27,500.

Integrix
(805) 376-1001

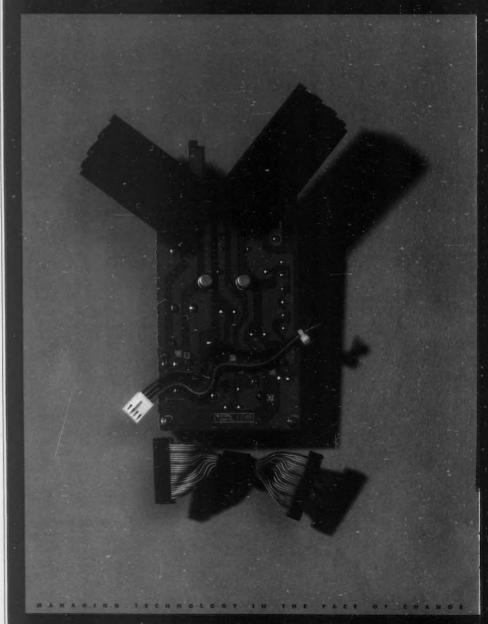
www.integrix.com

FiTech, Inc. has announced NetBankPC, software that allows online banking in a

secure environment.

The Heathrow, Fla., firm said the software is suitable for small to midsize banks and allows Internet access for customers regardless of PC make or model.

Pricing for NetBankPC starts at \$35,000. ► FiTech (407) 333-3723 www.mybank.com



PR-Consult has announced Biztrav International 4.0, a database application that expands upon earlier versions by adding the local access numbers of CompuServe and America Online.

According to officials at the San Diego company, Version 4.0 lets users go to the city data file and select CompuServe or America Online records to obtain the least-

expensive access to travel information.

Biztrav International 4.0 costs \$79. PR-Consult (619) 625-4622

www.ourworld.compuserve.com/ homepages/biztrav

Philips Electronics North America Corp. has announced two videoconferenceing kits, EasyCam and EasyConnect, for Internet and LAN users.

The San Jose, Calif., company said both kits include the Philips EasyVideo capture board. EasyCam includes a high-resolution color camera, and EasyConnect can be used with all existing camcorders and analog desktop video cameras.

Pricing for EasyCam and EasyConnect

is \$499 and \$299, respectively.

➤ Philips Electronics (408) 453-5129 www.pps.philips.com

Network Engineering Technologies, Inc. has announced Telaxian Shield, a firewall system designed for secure business transactions on the Internet and intranets.

Officials at the San Jose, Calif., company said Telaxian Shield lets users build an enterprise system of firewalls to consolidate security.

Pricing starts at \$7,995.

Network Engineering Technologies (408) 453-7500 www.fireants.com

Blue Sky Software Corp. has announced Help-to-HTML 3.2, which converts Windows help files into World Wide Web sites.



Blue Sky's Help-to-HTML 3.2 converts Windows help files into Web pages

According to the La Jolla, Calif., company, Help-to-HTML Version 3.2 lets users convert Windows 3.1, Windows 95 and Windows NT help files into Web pages, graphics interchange format files and image man files with one mouse click.

Help-to-HTML Version 3.2 costs \$199.

➤ Blue Sky Software (619) 459-6365 www.blue-sky.com

Global Village Communication, Inc. has announced NewsCatcher, a wireless desktop receiver that can deliver instant, customizable news to Windows 95-based PCs.

According to the Sunnyvale, Calif., company, the product doesn't require a constant connection to the Internet because it pulls information from the airwaves. Air-Media Live multimedia software organizes and presents the information.

NewsCatcher costs \$149. The price includes one year of PowerUp, a service package.

► Global Village Communication (408) 523-2407 www.globalvillage.com

Enigma Information Retrieval Systems, Inc. has announced Insight 3.5, which lets users publish on the World Wide Web via a one-step Hypertext Markup Language conversion process.

According to the Wellesley, Mass., company, Insight 3.5 was designed for webmasters who have no programming knowledge.

Insight 3.5 costs \$7,500.

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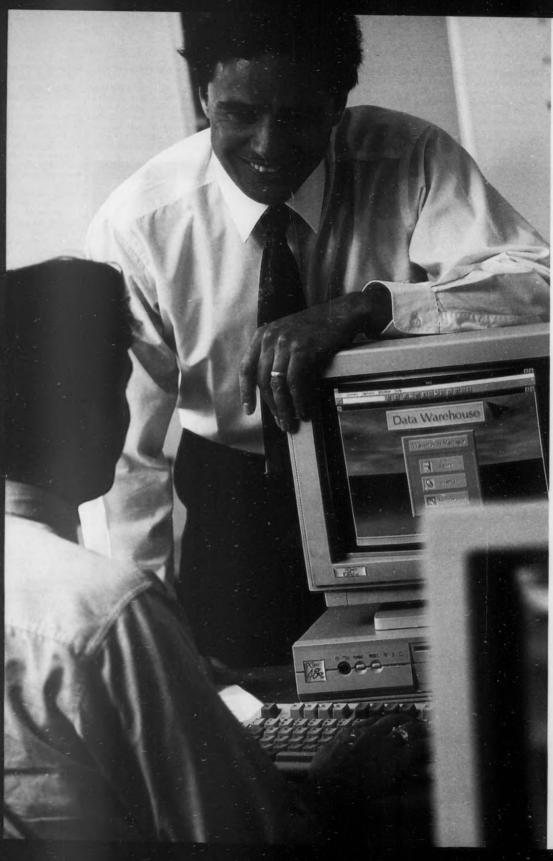
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Charlotte	November 5	Orlando	October 30
Chicago	October 22	Philadelphia	November 12
Cleveland	November 6	Phoenix	November 19
Columbus	November 7	Portland	October 16
Dallas	October 24	Salt Lake City	November 13
Denver	November 14	San Diego	October 1
Detroit	October 24	San Francisco	October 17
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Charles Schwab is creating a state-of-the-art stock quote system, 88

Corporate Strategies

Desktop video surge forecast

conferencing

By Matt Hamblen

ure, most desktop videoconferencing still has limitations
— including jerky live video
and a complicated setup.
Yet experts and users predict that business use of
desktop videoconferencing will explode
in the next two to four years, and they
are warning information systems managers to be prepared.

The number of desktop videoconferencing units sold to businesses in 1994

totaled 30,000, but that will soar to 6 million in 2000, according to analyst Elliot Gold at Telespan Publications in Altadena, Calif.

Gold said that there will be an additional 14 million home videoconferencing units sold in 2000, a rapid growth partially fueled by the increasingly rich video and audio features on home PCs.

Gold's prediction of 20 million total units sold in 2000 could be low, said analyst Cheryl Currid, president of Currid & Co. in Houston. "This stuff is going to explode, and it's going to explode in the face of IS." she said.

Also contributing to the technology's growth are plummeting costs, improving quality and ease of use, and plans for nearly every PC sold for home or business use to soon have videoconferencing tools bundled in, according to analysts and vendors.

Compaq Computer Corp., for example, has begun bundling video and audio

communications capabilities from Intel Corp. on the motherboard of its computers, and it won't be much longer before small desktop cameras are a standard part of most PCs, Currid said.

IS folks "need to be ready so that when the company CEO takes the redeye one day and sees an ad for videoconferencing and calls up to say, 'Let's do it,' you're ready," said Al Lill, research director at Gartner Group, Inc. in Stamford, Conn.

Combining audio, video and data applications for two or more PCs can save users considerable consultation time and travel, us-

> Success stories include the following:

Virtual Mortgage Network, Inc. in Newport Beach, Calif., and Flagstar Bank in Bloomfield Hills, Mich., have cut the time needed to obtain a mort-

gage from weeks to one or two hours.

Homebuyers use a PC — located in a real estate broker's office, for example — to contact a mortgage counselor or underwriter on another PC and talk face-to-face as they decide on the type of mortgage they want. The loan is usually

approved at that time.

In both cases, a dedicated group of loan counselors or underwriters works in the home office, answering hundreds of calls per week.

 Officials at Owens Corning Fiberglas Corp. in Toledo, Ohio, said it cut in half the time it took to bring to market an insulation product used in Whirlpool

> Corp. appliances. Technical teams shared drawings at semiweekly desktop videoconferences.

> • Kimmel Cancer Center at Thomas Jefferson University in Philadelphia has helped doctors at three suburban hospitals discuss the diagnosis and treatment of cancer. They can view and diagram patient images onscreen

• The Bureau of Labor Statistics in Washington has launched a prototype system that allows top offi-

cials to talk face-to-face while viewing a live video feed of, for example, President Clinton at a press conference.

Customer contact

Michael R. Hillman, vice president of business development at Flagstar, said videoconferencing helps re-create the contact customers had 40 years ago, when they could visit a mortgage banker in their neighborhood.

"We're trying to give that face to customers. There's immediate communication and review of an application," he



A demonstration of how a doctor at Kimmel Cancer Center at Thomas Jefferson University in Philadelphia can discuss a fluoroscopic image of a patient's stomach with another doctor in the suburbs

said. "They see the underwriter is a human and a real person."

The promise of drastic time savings in getting a mortgage is what brings people in the door to use the technology, Hillman said.

Quality issues

Video quality is usually the biggest drawback for first-time users, but some experienced users said it usually doesn't matter if they see video at only 10 to 15 frame/sec. as long as the sound and their view of data and applications are clear. More expensive units offer 15 to 20 frame/sec. of live video over Integrated Services Digital Network (ISDN) lines, but most don't offer television quality of 30 frame/sec.

Steve Molik, multimedia coordinator at Owens Corning, said his video system is connected by an Asynchronous Transfer Mode network that provides video at 15 frame/sec., creating some jerkiness in the video.

"The first one or two times somebody tries it, it seems to bother [users], but they become very quickly accustomed to it and would rather not go back to the old system. As with any technology, some of the old warhorses are resistant to change."

Still, there are some, even in the computer industry, who are skeptical

It's all in the details

organizations that use desktop videoconferencing have some tips for IS workers just starting out with the technology; of you plan to depend on ISDN service between LANs or for point-to-point service in a small

operation, remember that ISDN connections aren't available every-where, especially in rural areas. It also might take weeks to get ISDN installed.

It may seem obvious, but at each desktop, users should consider whether a subject's face or the object viewed for an application has enough light and whether background noise will interfere.

 ATM connec-

tions within a LAN improve the quality of desktop videoconferencing and help reduce interference with the data stream over the network. But they are expensive and can be justified only if the desktop videoconferencing application has an obvious and significant payback.

 You should analyze what types of problems your organization wants to solve with desktop videoconferencing and not just adopt the technology because it is new and exciting, said Michael R. Hillman, vice president of business development at Flagstar.

- Matt Hamblen

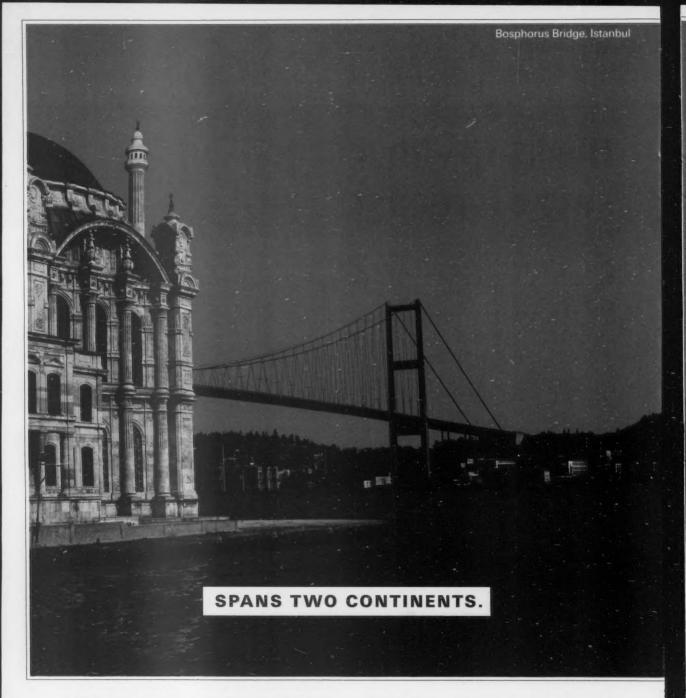
about predictions of the technology's popularity.

"I don't particularly care to videoconference with the people I work with, but maybe I'd be more willing to do so with my friends," said Chris Day, director of marketing at AuraVision Corp. in Fremont. Calif.

Day's company expects a 500% increase in video chip sales next year, mainly due to the demands of the Asian market. There, many users want their PCs to double as TVs, especially in home settings.

	BUSINESS (units shipped)	HOME (units shaped)
1994	30,000	0
1995	71,000	20,000
1996*	200,000	100,000
1997*	750,000	1.75 millio
1998*	1.75 million	3 million

Source: Telespan Publishing Corp., Altadena, Cali



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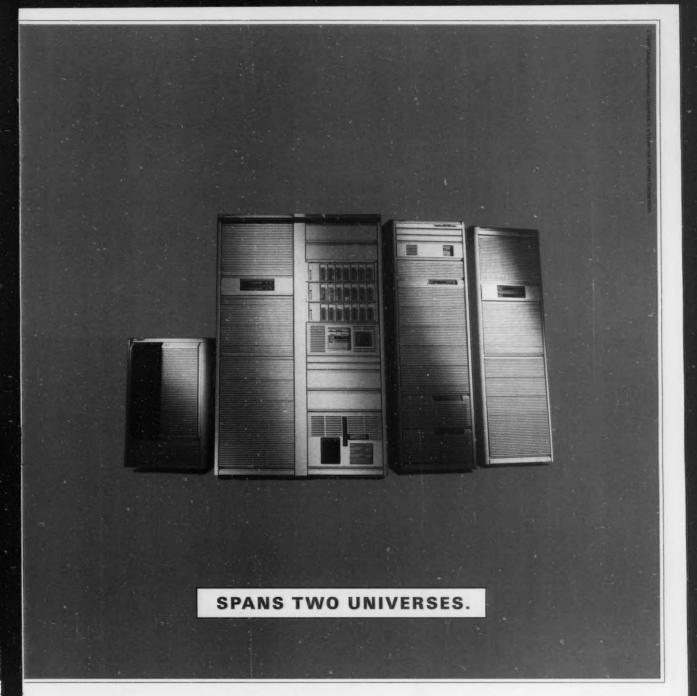
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The Information Management Company

Schwab dials up stock quote system

By Julia King

After two years of development, Charles Schwab & Co. is saving hundreds of thousands of dollars and has virtually eliminated service delays with a new, state-of-theart stock quote system that centers on the good old telephone.

That's right. The telephone, that relatively inexpensive, reliable and easy-to-use system interface that already sits on every office desktop and in nearly every home in America.

Pair it on the back end with new speechrecognition software from Nuance Communications, Inc. in Menlo Park, Calif, and — voila! — you have the key technoingredients of Schwab's VoiceBroker system.

Operational in 15 states, VoiceBroker lets callers speak in conversational English to get quotes on 13,000 stocks and mutual funds — all in real time and all without speaking to another human or negotiating their way through a long menu of keypad options.

Schwab customers simply dial a toll-free number, recite their eight-digit account number and the name of the stock — for example, IBM, International Business Machines or even Big Blue — and instantly receive an up-to-the-minute stock price.

"It seems so simple, but it really is rocket science," said Bob Morgen, project manager and a principal at SRI Consulting, Inc., which helped implement the system.



Schwab's trading desk staffers have more time to execute stock trades now that VoiceBroker offers customers quotes over the phone

"What the Nuance speech system is actually doing is taking each sound apart and analyzing it to figure out exactly what the caller said," Morgen explained.

The biggest application development

challenge was programming the system to recognize the hundreds of thousands of ways that callers may request stock information.

A customer who wants a quote for AT&T Corp., for example, might say "AT&T," "American Telephone and Telegraph" or

"Ma Bell."

"We sat around a table for months sifting through all of the things a person might say," Morgen said.

The project team came up with 2 million permutations on how to identify 13,000 stocks and other financial funds. Today, the Voice-Broker software recognizes them all in real time, he said.

The process

Here's how it works. The request comes in through a voiceresponse unit and is processed by the Nuance software.

The software analyzes the caller's speech bits and queries a central mainframe for the appropriate stock quote. From there, the quote is routed through the Nuance system to the caller — all within seconds. The Nuance software runs on a Sun Microsystems, Inc. SPARC server.

When a *Computerworld* editor tested the system last week, several requests for quotes were processed within seconds.

"No matter how busy the market gets, we expect to answer every customer's call immediately. We're hoping to take tens of thousands of calls a day through this system," said Alan Nathan, vice president of voice technology at the San Franciscobased brokerage.

"The benefit to Schwab is that we can better plan for market spikes. It's easier to build in [additional system] capacity than have folks sitting around and not knowing how often their phones will ring," Nathan said.

Prior to VoiceBroker, traders and customer service representatives provided callers with quotes.

Now those people can focus on higherlevel activities, such as executing stock trades, Nathan said.

"We're doing with the telephone what it was meant to do," Morgen said. "Touch-Tone [systems] are useful for inputting numbers. But when you need more complex information, you need to talk."

Year 2000 problem comes bundled with legacy of potential litigation

By Thomas Hoffman

Every business with a contract or commitment that stretches past 1999 risks an expensive lawsuit if its computers can't keep track of the year 2000. And the bigger the firm, the greater the risk.

The average Fortune 500 company that doesn't make the requisite year 2000 programming changes can expect to pay \$100 million in litigation costs, said Capers Jones, chairman of Software Productivity Research, Inc., a software management consulting firm in Burlington, Mass.

Despite such startling statistics, most year 2000 project managers aren't communicating the ur-



Milliken's Ken Elliott: Companies need to audit IS staffs to determine where to outsource

Beyond the legal ramifications, there is the programming. Companies must audit their information systems staffs "to determine where [they are] going to need outside help" for reprogramming datesensitive code, said Ken Elliott, year 2000 project manager at Milliken & Co., a textile manufacturer in Spartanburg, S.C.

Rooted in the past

Many of the problems organizations face stem from their unwillingness 15 to 20 years ago to pay for additional storage needed to provide programs with four-digit date fields, Elliott said. "It's tough getting management to understand this" now that storage costs have plummeted over the past five years, he said.

Officials at Avon Products, Inc. in New York hope to avoid potential legal obstacles by adding functionality to the company's core financial systems.

With an estimated cost of \$18 million to repair all its year 2000-sensitive code, officials at the cosmetics maker have decided to spend an additional \$7 million to replace or upgrade all affected programs, said Spencer McIllmurray, vice president of information technology at the company.

By upgrading its software, Avon can spread the \$25 million cost over five years, McIllmurray said. Otherwise, the year 2000 work would have to be classified as a

one-time quarterly expense under new accounting rules enacted by the Financial Accounting Standards Board.

Not all companies will be as fortunate.

Leon Kappelman, associate professor of

business computer information systems at the University of North Texas in Denton. compiled the SIM year 2000 study, described a recent conversation he had with the chief information officer at a Fortune 10 company.

The CIO said he expects his company to lick

company to new the date problem by replacing all its legacy software with SAP AG R/3 integrated business software. But that strategy doesn't deal with date-sensitive code built in to the company's hardware, Kappelman said.

That could leave the company vulnerable. Corporate boards of directors "need to know about this so they can prepare for the litigation that's going to come," Kappelman said.



The University of North Texas' Leon Kappelman: Hardware with datesensitive code may leave a company vulnerable

Briefs

Investment investigated

The Philadelphia Stock Exchange is investigating its chairman for investing in a small computer firm that eventually won a contract with the exchange to develop a special trading system for institutional investors. The exchange has hired a lawyer to investigate the relationship between Vincent J. Casella, its chairman since March, and Ashton Technolog Group in Columbia, Md., which the exchange hired in September 1995. Although Casella invested in Ashton Technology before he became the exchange's chairman, he was at that time - April 1995 - heading an ex-

change committee that recommend-

Year 2000 tool

ed the deal.

Computer Horizons Corp., a year 2000 services firm in Mountain Lakes, NJ., has introduced Signature Time Engineer, a software tool for reducing the length of implementation projects by 30% compared with standard data or process-based systems. The reduction is achieved by using software rules and options that allow dates to be "windowed" and aged dynamically. The software, available now for Cobol, is being priced on a client-byclient basis.

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Get to know

By Jeremy Schlosberg

When Bob Herbold, chief information officer at Procter & Gamble Co., was named third in command at Microsoft Corp. two years ago, people who knew him said, "Perfect!" People who didn't, which was almost everybody in the information systems world, said. "Huh?"

"Bob Herbold?" a Microsoft analyst at Dataquest asked when called to comment. "Who the hell is he?"

Robert J. Herbold is a former computer lab manager who left IS and became a corporate superstar. More specifically, he is the executive vice president and chief operating officer at Microsoft, right behind Chairman Bill and Steve Ballmer, executive vice president of sales, marketing and services. And before joining Microsoft, Herbold was in the unusual position of heading both IS and advertising at the No. 1 manufacturer of household products on the planet, Procter & Gamble, in Cincinnati.

And although he's staying behind the scenes at Microsoft, he's making waves. Finance, operations, manufacturing, IS and marketing all fall under Herbold's purview. He meets regularly with IS executives. So far.

he's sold a factory, moved Microsoft to standardize its internal data and introduced three-year business planning and new ways to analyze advertising and consumer response. Herbold is injecting rigor and discipline, consumer marketing know-how and IS experience into your most influential vendor.

"Remember, Microsoft is still only a \$7 billion or

\$8 billion company," says Amy Wohl, president of Wohl Associates in Bala Cynwyd, Pa., a workplace technology consulting firm.

"If they want to make it to that next level, then they need experenced financial and general management to help them get there. Bob Herbold is that kind of person. He definitely counts as one of the grown-ups at Microsoft," Wohl says.

And he got there, in large part, by taking a skill most IS staffers possess — a knack for analysis, rigor and quantification - into a new career in marketing.

Herbold began his Procter & Gamble career in 1968 as a computer specialist and statistician in the Industrial Engineering Division, then moved into IS management.

"He was not only very, very bright, but his aspirations were significantly different [from] most other IS

people," remembers Gerard Liberty, a former P&G IS staffer who is now director of information services at Welch Foods, Inc. in Concord, Mass. Herbold, then a thirtysomething, greyhaired IS manager, took a oneyear rotation as a brand assistant, marketing's bottom rung, and stayed on.

Why the switch? Herbold was art enough to realize that "marketing presented the greatest opportunity for reaching a high level at P&G," Liberty says. But Herbold, a trained mathematician, also liked mar-

Bob's bucks

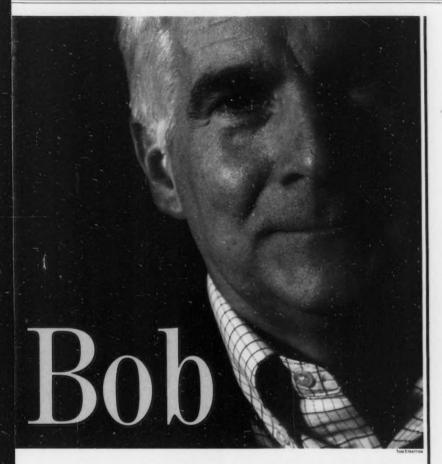
According to Microsoft documents, Herbold's base sulary is \$450,000. But that's only the beginning:

- He was guaranteed a minimum bonus of \$200,000 a year in each of his first two years, plus a \$250,000 signing bonus.
- He will receive a \$250,000 benus for three years on the autiversary of his hiring date. No big stock options are slated until 1999.



ADVICE ON ADVICE

GETTING THE "BEST" ADVICE FROM CONSULTANTS
IS ALWAYS APPEALING, BUT BEWARE: IT CAN
SPELL RUIN FOR IS MANAGERS, PAUL
STRASSMANN WRITES. PAGE 97.



keting's number-crunching side. He was fascinated to discover that P&G's marketing folks were quantitatively studying human behavior — that, in his words, "the more you can quantify marketing, the better off you are." The number-crunching quant turned computer scientist found that those skills could mesh with P&G's marketing-driven mainstream culture.

And it helped him fit with his new boss, that Gates fellow. Once Herbold was brought in for official interviews, the chemistry became apparent to everyone. "He and I hit it off well," Herbold says. "He's a very objective guy, a very data-driven guy who is also a great human being, so he's a pleasure to work with."

Through the '70s and '80s, Herbold climbed the P&G marketing ladder, rising to brand manager, ad manager and market research director — one of the great number-crunching jobs in all of business. He moved back to IS in 1987 as manager of information services, was promoted to vice president, then combined his two career paths in 1990 when he became senior vice president of information services and advertising.

He was clearly a player. He controlled the largest advertising budget in the universe and ran an IS organization that supported 99,000 employees and took in \$33 bil-

lion in revenue. He became deeply involved in operations and logistics, helping to lead his company and the consumer goods industry into the quick response era by using information technology to more efficiently and quickly restock store shelves.

And Herbold had become something of a new media guru at P&G in his final years there. He, in fact, was a prime mover behind the bombshell speech former P&G Chairman and CEO Edwin Artzt gave to the American Association of Advertising Agencies in May 1994. The speech urged agencies to embrace new media.

But generally, Herbold preferred to stay out of the public eye. "P&G execs tend to shy away from the limelight," says a P&G insider who (of course) requested anonymity, and Herbold was no exception. That's not a bad trait for the No. 3 man in a firm with two publicity-loving senior executives.

And although he's a quantitatively oriented computer scientist, he values intuition and gut feelings in the work-place. "He often asks people, "What does your instinct tell you?" the P&G insider says. "He knows, somehow, that people may have a difficult time explaining why something is the right thing to do, but they still know it's Bob, page 94



What you can't find could hurt you

WHAT IS IS' JOB IF NOT TO MANAGE INFORMATION?

A summer survey of 700 information systems managers worldwide showed that 80% are "concerned" or "very concerned" about whether they're properly managing the growing mass of information their businesses need.

Among the biggest worries: the performance and response time of applications that deliver information, the security and integrity of the data those applications access and keeping those applications up and running.

The survey, conducted by New York research and consulting firm Find/SVP for storage vendor EMC Corp., found that IS executives are increasingly nervous that their information management failures could hurt the bottom line. Two business areas of prime concern include improving customer service and reducing the time it takes to bring new products and services to market. The study showed 13% more IS managers are concerned or very concerned about those areas compared with last year.

"We have been working for years to come up with what we think is an effective workflow process and strategy," says Roy Wilsker, manager of technology planning at The Kendall Co., a Mansfield, Mass., manufacturer of health care and other products. "That's been complicated by the fact that there are lots of players involved, and there's such a quick turnover of technology. Getting the proper infrastructure to the proper people at the proper time gets more and more difficult."

Before you can manage information, of course, you have to find it. Seventy percent of the IS managers surveyed say there's at least 10 times as much critical data votside the data center as there is inside, where IS at least has a chance of tracking it. "Ninety percent of the information swirting around the corporation is compartmentalized on people's computer disks and private files," Wilsker says. — Robert L. Scheler

More F.Y.I., page 94



Project managers' suggestion box

SOME GOOD ADVICE FOR KEEPING PROJECTS RUNNING EMPOTHIX

JOT DOWN, FOLLOW UP

It happens all the time. Some IS Cassandra on a project team speaks up about a problem, but the manager forgets to follow up. Result: A preventable problem derails the project. At a recent Project World conference in Washington, Christopher P. Higgins, senior vice president of payment services project management and corporate facilitation services at Bank of America in San Francisco, suggested a way to prevent that. His project managers use a database to track project-killers.

At weekly project team meetings, after the project status is reviewed, members are asked to bring up issues that must be addressed. The project manager enters them in a database, then puts someone in charge of addressing the problem. The issues are brought up at the next meeting and at each succeeding meeting until they're solved.

THE ELIMINATOR

Want a simple way to eliminate redundant, unnecessary projects? Higgins suggests this low-tech technique: Step 1: Have your project managers write one-sentence descriptions of their projects on index cards. Step 2: Arrange the cards, placing similar or related projects next to one another.

Step 3: Look. The index cards will show the projects that connect, duplicate or overlap one another.

Higgins says this technique enabled him to eliminate one-third of the projects and consolidate many others. Just one caveat - you'll need a big conference table.

REAL DEADLINES

Tired of missing deadlines? Let your staff help set them. Jon Hockenberry, a senior IS project manager at Shell Services Co. in Houston, recently led a successful sales force automation project. That team met its deadlines because members were personally and professionally motivated to hit them. "The key was the team committed to the delivery," not him, he says.

Why? Because the team negotiated directly with the sales managers, Hockenberry says. During the negotiations, team members came to understand the business reasons for the due dates the sales managers wanted. They also negotiated to have the project divided into "meaningful chunks," with deadlines for each. Hockenberry says his role was to facilitate the process and underscore the business drivers behind the sales managers' requests, instead of setting the deadlines. - Allan E. Alter

Are you a project manager with field-tested tips to offer? Send them to allan_alter@cw.com. If your submission is used, we'll send you a spiffy alt.cw T-shirt.



CONTINUED FROM PAGE 93

right. This is very unusual for an MIS guy." His quantitative skills, and those sensitivities, go a long way to explain how he was so successful in his quarter-century career as a "Proctoid."

But now Herbold is at Microsoft. How has he affected the House of Gates? IS managers will probably feel his impact most as an IS insider at the top of Microsoft.

There's no denying he's wellequipped to relate to IS management.

"He has formed a bridge to people still in IS, in the world he left behind," says Dwight Davis, editorial director at "Windows Watcher," a Windows industry executive newsletter in Redmond, Wash. "He can say, Look. I really do understand the issues you face."

While Herbold asserts that all of Microsoft's brain trust "get out to the field regularly." he acknowledges that he does "more of it because I was one of those [IS] guys, and I still know a lot of those guys. I can explain how we're using technology to run our company so that they can better consider how they might use the same technologies to run their companies." He can also take what he hears from the field back to Redmond; he and Ballmer regularly compare field notes, he says. They like "to make sure we've got the right kind of feedback being put into the system," Herbold says.

He also likes to showcase Microsoft's internal systems. For example, Microsoft's finance intranet is a pet project for Her-bold and "one of our hottest demos right now in terms of CIO interest." Herbold says it standardizes financial information globally, gives everyone cost-effective, up-to-date, paperless access to information and is relatively simple to create and maintain.

He also has a big impact on Microsoft's internal operations. He's introduced certain For-

tune 500 business disciplines to Microsoft. For example, he's pushed hard to cut Microsoft's fixed costs. He was a big force behind Microsoft's decision to sell the 500-person Canyon Park manufacturing facility to an old P&G competitor, Tokyo's Kao Corp. (Not that he deserves a reputation as a hatchet man; he says, and Davis confirms, that he wouldn't sell the facility to a company that couldn't guarantee that jobs would remain intact.) Herbold introduced new formal planning processes to Microsoft: three-year technical plans to anticipate where the technology is going, three-year business plans with revenue and profit projections for each business unit and annual head count projections and fiscal plans.

Similar disciplines are sprouting up within Microsoft's in-house information systems. Another Herbold-inspired change has been the move toward standardized data. The biggest step has been redoing the general ledger worldwide as part of the company's SAP installation.

Sexy stuff for most Microsoft staffers? Probably not. But changes such as these help ensure Microsoft won't choke on its growth. "He has increased the level of professionalism in all areas which he oversees," Davis says.

Herbold's fingerprints are harder to make out when it comes to Microsoft's marketing, even though marketing reports to him. He holds his cards close to the vest when it comes to the subject of marketing to corporate IS. He joined the company too late to be responsible for the hu-

> mongous Windows 95 advertising campaign. And Herbold is the first to admit not everything he learned at P&G about consumer marketing applies to the fastpaced software world

"And here I used to think the detergent market moved fast," he

But Herbold is bringing his love of quantitative analysis to Microsoft's marketing and advertising, particularly in consumer marketing. He also has considerable enthusiasm for the World Wide Web as a marketing medium. If you thought Microsoft was already a marketing powerhouse, you ain't seen nothing yet.

He became closely involved with researching the impact of the Windows 95 ad campaign on consumers - a bit of follow-through Microsoft hadn't done with any of its products in any sort of stan-

dardized way.

He's also bringing new marketing research tools to the Gates crowd. One new tool Herbold is especially proud of introducing to Microsoft is the so-called splitcable test. This methodology lets an advertiser control which households receive certain TV advertisements. "It's a fantastic and precise tool," Herbold says. "You can really see how your television advertising is working."

And just as he was at P&G, Herbold is equally enthusiastic about Microsoft's charge onto the Web. "We're jumping all over the Internet as a marketing tool," he says. What he likes best about online activity is how "it gives a new level of quantification to marketing." On a Web page, he can automatically track the number of people who have visited a certain page,

the number of clicks on the banner to link them to more detailed information about a product and the number of people who sign up to receive additional information.

"It's like instant direct mail," he says. "It's very excit-

No, most computer scientists don't find direct mail ex-

citing. But Herbold shows the distance between mainframes and marketing can be bridged. Yep, a quant, a numbers guy, a computer scientist who goes in for systems and rigor can make it to the top of corporate America. Who says CIOs can't get ahead? ■

The Herbold file

ROBERT J. "BOB" HERBOLD

AGF: 54

TITLE: Executive vice president and chief operating officer at Microsoft

RESPONSIBILITIES AT MICROSOFT:

Overseeing worldwide operations, including finance, manufacturing, distribution, logistics, IS, human resources, corporate services and real estate. He also oversees Microsoft Press and all corporate marketing activities.

KEY POSTS AT PROCTER & GAMBLE: Herbold's last P&G post was senior vice president of advertising and IS. Before that, he was:

- Manager of Miami Valley (R&D) Labs Computer Center
- Brand manager of Spic & Span
- · Advertising manager of Packaged Soap and Detergent Division
- · Manager of market research department
- Vice president of information services

EDUCATION: Bachelor's degree, University of Cincinnati; master's degree in mathematics and Ph.D. in computer science, Case Western Reserve University

FAMILY: Married to an attorney; three children, all college graduates

HOBBIES: Hiking, fishing



Schlosberg is a freelance writer in Cincinnati.

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Paul A. Strassmann

Best practices? Or placebos?

Need advice on how to manage IS? Watch out for everyone who claims to know which 'best practices' will fit all companies.

ome of the most prominent U.S. consultants and advisory services now present their clients with comprehensive checklists of what are, in their opinion, the attributes of excellence for managing information systems.

Advisory services offer tips and high-priced periodic reports on whatever topic seems to befuddle information executives. Large consulting firms collect their best practices in an unending stack of loose-leaf binders. Those become handy sources of repeatable advice for their less experienced consultants.

Having a comprehensive compilation of best practices is good business. A recent series of full-page advertisements from one of the largest consulting firms declared that "... our professionals will start by sharing... what works best for others."

Receiving the "best" advice is always appealing to managers looking for assurance that they are doing the right thing. But beware: It can spell ruin for IS managers.

Any idealized list of what is "best" could be irrelevant in dealing with a company's unique maladies. Managers who adopt generic lists without understanding their companies' real problems, priorities, schedules and budgets are sure to end up searching for new jobs.

Consultants don't explain how they come up with their suggestions except by mentioning that they reflect the experts' views. Nor do the originators of best practices lists explain how they validated their prescriptions with independent performance measures such as profitability.

Consultants like the best practices approach because it lets them write an impressive report based on their firms' preferred practices and methodologies.

But if you are still sanguine about best practices lists, consider this: ined the financial results of all 23 Baldrige winners through last year. My purpose was to discover if economic performance is related to the high ratings for complying with what prominent experts believed to be standards for excellence.

Ten organizations are privately held or have been merged, and therefore financial data isn't available. One of those firms, Wallace Co., filed for bankruptcy protection two years after it won the Baldrige in 1990.

Of the remaining 13, results are published only for the parent company, some of which entered just one They detracted \$101 billion from the U.S. economy.

Implications for CIOs

Consultants, as well as government agencies, have developed exhaustive checklists of generic best solutions for IS. They are comparable to a pharmacist's reference book that lists all the wonderful vitamins, miracle drugs, ointments and injections.

But consuming the best pharmaceuticals indiscriminately won't guarantee superior health. Medicines are effective only after correct diagnosis, correct prescription, adherence to instructions and continued good care.

Instead of seeking to adopt the best practices from somebody's list, chief information officers would be better off by first coming up with ways to determine what their firms really need. CIOs need to devise processes that will assure that they comprehend and can measure what performance goals are worthwhile. Only after that is done

is it safe to look up a catalog of good ideas and find which ones may fit their situation.

IS executives should beware of anyone who invokes generally applicable best practices as the source of his or her authority. No one has yet demonstrated that there are universal insights for delivery of systems superiority. Not enough is yet known about the influences that deliver exceptional organizational performance. Anyone who presumes he or she can compile a generic list of what makes excellent information management is guilty of peddling placebos instead of curing ills. w

No one has yet demonstrated that there are universal insights for delivery of systems superiority.

There is evidence that excellence can't be based on complying with even the most elaborate set of desirable attributes. Just consider the most prestigious prize in U.S. business — the Malcolm Baldrige National Quality Award, given out annually by the U.S. Department of Commerce.

The Baldrige award

The checklist to qualify for the Baldrige award is by far the most comprehensive catalog of what experts believe to be prescriptions for excellence. Specially appointed examiners rate hundreds of acts before they can certify that an organization has earned a nomination.

How have those "quality" companies fared in the real world? I exam-

of their major divisions in the contest. Nevertheless, in each case the parent company spread the fame to the entire firm. Therefore, I felt justified to look at the total financial results of the Baldrige winners.

Only two of the 13 firms show a positive economic value-added (defined as profits minus costs of shareholder equity) for the seven-year period from 1988 through 1994. Solectron Corp. and Corning, Inc. added \$134 million to the U.S. economy. Eleven of the winning firms, including Armstrong World Industries, Inc., Eastman Chemical Co., Xerox Corp., Federal Express Corp., Texas Instruments, Inc., Westinghouse Electric Corn. General Motors Corp. and IBM, show value-added. negative economic

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— Peter Athan, Manager,
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Buyer's Guide

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Users approve of Oracle's Web strategy

BY AMY MALLOY

Second in an occasional series of reviews that focus on the World Wide Web-enabling strategies of the leading database vendors.

onnecting back-end databases to a front end for intranet use is new technology, but Oracle Corp.'s line of intranet-based products is getting positive reviews from early users.

Oracle is one of several companies
typically known for database applications —
that have joined the list of Internet/intranet vendors. On July 16 Oracle held an intranet strategy
day, outlining products that the vendor claims provide an "end-to-end solution for business-critical
corporate intranets."

Computerworld spoke with several Oracle users who are in the early implementation stages with Oracle's products and who have been eyeing Oracle's strategy. At this point, user companies are experimenting with product capabilities. None of the users Computerworld spoke with uses all the features of the product line.

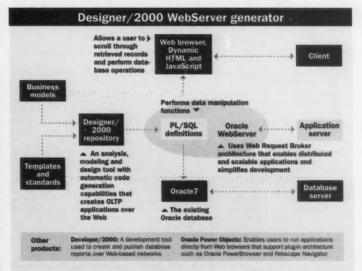
Computerworld interviewed John Fontaine, webmaster at Trade Compass in Washington; Fred Loebl, manager of database administration at Chiron Corp. in Emeryville, Calif.; Luc Verhelst, information technology manager at Kind and Gezin in Brussels; and Dan Mallin, electronic marketplace manager at Imation Corp. in Oakdale, Minn.

Those early users say they think Oracle's got what it takes to succeed in this realm. "I think they've got a very good plan," Fontaine says. His reasoning: Oracle is helping companies translate information from legacy systems into current models, unlike the move from the mainframe to PCs where companies had to reinvent. Information housed in databases is still usable.

Users credit Oracle with taking an active approach to the Internet. "They are not waiting to see how the Internet develops. They are out there shaping it themselves," Loebl says.

Using Oracle's online analytical processing product, Fontaine is able to "do sophisticated analysis of data." For instance, his company provides trade information and, using those products, it's able to produce amounts and graphs that provide information such as trade patterns between the U.S. and Japan.

When it comes to intranets and corporate data-



bases, each company's needs and purposes are different. Additionally, companies pick and choose among Oracle's intranet line. Using a combination of Oracle's products, Kind and Gezin, a Belgian government organization, plans "to generate dynamic HTML pages by accessing Oracle databases," Verhelst says.

Whichever approach companies take, the basic issues of installation, development, maintenance and support affect all users. The users who were interviewed discussed their experiences in those areas and graded Oracle products in general. Grades given by each company are listed in the following order: Chiron Corp., Trade Compass and Imation Corp. Kind and Gezin didn't provide grades.

INSTALLATION



When it comes to ease of installation of these products, it seems fair to say it depends on the installer and the company's platform. Mallin uses Designer/2000 and Developer/2000, and he has

installed WebServer 2.0. But he notes, "To get all three of those up and running on a system is a major pain." He attributes that to the fact that "they are typical big systems, rather than shrink-wrap software."

Others beg to differ. "[Installation] is an area where Oracle has improved. All the bugs are worked out," Loebl says. He uses Designer/2000 and Developer/2000 and will install WebServer before the end of the year.

And another user said it was a relatively smooth process. "We had no particular problems installing the tools," says Verhelst, another user of Designer/2000 and Developer/2000 and soon to be a user of WebServer.

DEVELOPMENT ENVIRONMENT



After installing WebServer, Designer/2000 and Developer/2000, users found the development environment accessible. Fontaine says the Web administration facilities, tools and class libraries met Oracle's new strategy, page 100

New strategy

CONTINUED FROM PAGE 99

his needs and were easy to use.

But one user wanted a simpler environment. "I would like to be able to hire someone with a base-level knowledge and have them run it without extensive training," Mallin says.

According to users, maintaining the code in this environment is easy. "Very easy to use," Fontaine says.

Loebl agrees. "It is very easy to maintain the code," he says. According to Oracle, automatic code generation and wizards reduce coding considerably, and debuggers flag and help narrow

down and locate coding inconsistencies.

SUPPORT



"It has gotten very good recently," Loebl says about Oracle's technical support. He attributes that to Oracle's understanding of the customer's changing needs. "It is one of Oracle's pluses." But he's quick to point out that that hasn't always been the case with Oracle.

"I have not had to rely on technical support. I've had no problems," Fontaine says.

Similarly, Mallin says he has been generally pleased with support but adds that it could always be better. And he would like Oracle to provide more services and handle more of the overall process for Imation.

ACCESSING NON-ORACLE DATA

This isn't an area that greatly concerned users, but the one user who needed access to non-Oracle data regretted that he did. "It is very difficult. You are locked into using Oracle as a back end," Loebl says. As a result, his company no longer tries to access non-Oracle data; Chiron found it too difficult.

Another user avoided the problem by moving a proprietary database to Oracle. Now, accessing the information isn't a problem.

Similarly, Mallin didn't attempt to access non-Oracle data. "We have a few legacy databases, but we are migrating away from them." he says.

Mallov is Computerworld's assistant researcher.

IntraBuilder brings databases to Web

BY GARRETT N. RAY

ry deploying a company database such as a telephone directory over your intranet, and most likely you'll require an army of developers with expertise in Hypertext Markup Language (HTML), Common Gateway Interface (CGI) and database and networking skills. Or you might consider a faster, easier and cheaper alternative: Borland International, Inc.'s new IntraBuilder development and delivery system for internal company intranets.

IntraBuilder was announced in July and began shipping recently. Given the limitations of this

beta-test version, I was unable to test the performance and throughput of IntraBuilder in a live departmental setting. Clearly, those areas remain an open question. But in the areas of development and deployment, it appears that IntraBuilder will provide an enormously speedy and useful solution to any company that wants to build database-active intranets.

Released for beta-testing in Auust, Borland's intranet developmen

gust, Borland's intranet development system includes a series of visual development tools to create forms, reports and databases. It also includes the middleware technology needed to deliver persistent database connections over an internal TCP/IP network. Using IntraBuilder, a developer can create, test and deploy an intranet-ready database application in hours or days rather than weeks or longer.

In the fashion of almost all of Borland's database and programming products, such as Delphi and Visual dBase, IntraBuilder is first and foremost a visual development tool. That means faster and more coherent development efforts.

Creating an application

Creating an IntraBuilder application is very straightforward. Using a new or existing database, developers begin with the field-level data to build new reports, forms and queries. The process is almost identical to that of Borland's Visual dBase and Delphi. I had no difficulty creating new database tables almost instantaneously or en-

abling existing Paradox and dBase database files for intranet deployment.

The next step is to develop forms and reports. Rather than requiring extensive use of HTML, IntraBuilder provides "Experts," which are automated, step-by-step wizards that guide developers through the construction of forms and reports. (Other Experts are provided for table and home page creation.) A related set of Visual Property Builders allows fine-tuning of most report or form components, such as fonts and colors. Using those tools, developers can readily customize the look and feel of an application.

A special "custom form set," which can be created by the intranet developer, allows one form to

inherit the properties of another. Thus, a particular look can be created once and used repeatedly in subsequent forms. Changes made to the parent custom form set will automatically be used by all related child forms, saving extensive development time. The familiar Borland properties palettes allow detailed customization of almost every object in an application. For example, the

in an application. For example, the font, alignment and rotation of text fields can be minutely adjusted.

A script editor provides hand-coded access to all IntraBuilder components. Because all components ultimately are stored as JavaScript, developers can extend and modify IntraBuilder applications by hand, if desired. But IntraBuilder's JavaScript orientation doesn't levy penalties on the user of an application because all JavaScript runs on the server side. Users can freely use the browser of their choice.

In addition to the development environment, IntraBuilder includes three underlying middleware components that eliminate CGI coding headaches

The Borland Database Engine (BDE) — which is also provided with other Borland tools such as Delphi — provides native, back-end support for dBase DBF and Paradox DB files. The BDE is also compatible with Microsoft Corp.'s Access and a variety of SQL-compliant database engines via Open Database Connectivity and Borland's SQL-Links database drivers. Because of the inherent



Borland's IntraBuilder can use new or existing databases to create applications

integration of the BDE within IntraBuilder, developers won't have to work with CGI at all to obtain database connectivity.

Two other IntraBuilder components provide similar back-end functions, though developers will rarely, if ever, need to work with those directly. IntraBroker is IntraBuilder's interface to the CGI, Netscape Server API (NSAPI) or Internet Server API (ISAPI) services provided by a variety of Web servers, such as O'Reilly & Associates, Inc.'s CGI-compliant WebSite 1.1 server, which was used in this review. And the IntraBuilder IntraServer automatically converts database queries and activities to and from JavaScript for execution on the server.

The basic IntraBuilder package (\$99.95) supports a CGI-compliant server and Borland DBF and DB databases. It is packaged with Borland's Personal Web Server. The \$499.95 IntraBuilder Professional will provide support for concurrent Web connections and for ISAPI- and NSAPI-compliant servers; and support for database drivers for Microsoft's SQL Server and Borland's Inter-Base. It includes the Netscape Fast Track Server. Both versions require Windows 95 or NT.

At press time, IntraBuilder was available for evaluation from the company's Web site (www.borland.com). Final delivery dates hadn't been announced.

Ray is a freelance reviewer in North Conway, N.H.



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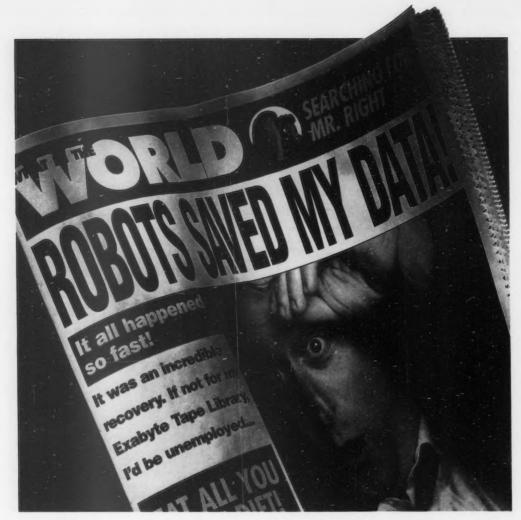
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BUILD THE BUSINESS CASE FOR REUSE

What to do: Educate your staff and business partners about the need for reuse and what it takes to achieve it.

Why: You'll need broad support to make the heavy investment in tools,

infrastructure and training needed to achieve reuse.

For example, Chubb & Son, Inc. spent four years and millions of dollars to build a companywide data model to move toward reuse. That project had the backing of a business manager who wanted to bring insurance products to market more quickly while holding down information technology costs, says John Carducci, vice president of information services at the Warren, N.J., insurer.

To enforce the common technology standards and processes needed for reuse, you need "management from the top saying, "Reuse is important to us,'" says Bryan McElderry, manager of integrated application technologies at Chevron Information Technology Co. in San Ramon, Calif.

How to do it: Establish metrics that show your level of software reuse and your progress as investments

Reuse revealed, page 106

REUSE REVEALED!!!

CONTINUED FROM PAGE 105

pay off. Demonstrate the value of reuse in projects that are big enough to matter but not large enough to endanger the company. Use intranets to show users how rudimentary components such as pictures or logos can be shared and reused, then extend the concept to more complicated components.

Costs/risks: You may spend so much money or time making the case for reuse that you never get started on the technical work. Talk of high costs may scare off business managers unless you can make a compelling case.

BUILD THE INFRASTRUCTURE FOR REUSE

What to do: Put in place the necessary hardware, software, processes and skills.

Why: Developers must think of development in a new way before they can build, find and reuse components. Users must have common hardware and software platforms on which to run those components.

How to do it: Create an enterprise data model.

"If your data isn't consistent, you won't be able to reuse the components" that use that data, says Susan Olszewski, an MIS executive at AT&T EasyCommerce Services in Parsipanny, N.J. Train developers in functional design and modeling, which will make them think about reuse early in the design stage. Create a component repository that makes it easier to store, document, track and find components. Set and enforce standards for such things as development tools, operating systems and database servers.

Companies that are serious about reuse must eliminate "islands of technology" that can't share components, says Paul Bassett, a founder and senior vice president of Netron, Inc., a software development tool vendor in Toronto. A three-tier architecture that separates the application logic from user interfaces and databases makes it easier to build business logic that can be reused, even as interfaces or the data change.

Costs/risks: Setting common standards takes time, money and haggling. A massive task such as developing a corporate data model can bog down in "analysis paralysis," Olszewski says.

Carducci agrees. "You need to focus, and you need a deliverable," he says. "You can be out there delivering all things to all people, and you wind up delivering nothing to no one." But beware: Rushing to the wrong tools or developers can cause expensive delays.

BUILD ON WHAT YOU HAVE

Why: The business knowledge and applications you've already developed are an invaluable asset. Reusing whatever you can is far less expensive than building every reusable component from scratch.

What to do: Start with existing business rules, stored procedures or even business-area analyses rather than developing exotic object-class libraries. That allows you to get your feet wet and show some business payback relatively quickly.

Chubb, for example, used Texas Instruments, Inc.'s Information Engineering Facility to create a repository of business rules stored as more than 400 tables in a DB2 database. The business rules are reusable components, which Chubb combines to support new insurance products. The goal is to let Chubb create products by simply entering new business rules, thus requiring little or no additional programming. Because the system just became operational, Carducci says, it's too soon to tell whether that will happen.

That approach holds some promise for Shimmon Schwartz, even though the manager of MIS for the portfolio management group at money management firm Sanford C. Bernstein & Co. in New York is otherwise thoroughly skeptical about software reuse. "Very often, [we ask users] over and over, 'How does this process work?" he says. "If this were documented, we could get a certain kind of knowledge reuse" even if that falls short of code reuse.

Although he's skeptical about widespread reuse, "small, generic stored procedures can be pretty easily reused," Schwartz says. He adds that basic database functions such as inserts, deletes, updates and some selects can be reused.

Costs/risks: As in the case of Chubb, even limited reuse can have high up-front costs. Limited reuse may also result in "stovepipe" collections of components that can be reused only within business units.

MOMENTUM NOW!

What to do: Start small, but start. Don't wait until you find the ideal methodology, development tool, repository or component library.

Why: It's the most cost-effective way to teach your organization — and yourself — about reuse while delivering the business benefits you're paid to produce.

How to do it: Begin by building lowlevel components that provide generic application services, such as printing, dialog boxes or basic workflow functions.

Another pragmatic approach is to let reuse develop naturally among small groups that work with common tools on common problems. "We use C++ for some projects, Smalltalk for other projects and Visual Basic plus OLE for other projects," says Pat Kerpan, head of technology at CBIC Wood Gundy, a New York investment banking firm. Because members of each group all use the same tool and are under pressure to get an application out the door, he says, they will naturally reuse objects rather than rebuilding them individually.

Costs/risks: As with the previous strategy, the risk is that reuse will never spread across departments, business units or individual development projects.

Scheier is Computerworld's senior editor,



IS THE WORLD CRAZY? OR IS IT MARY-JANE JARVIS?

While her peers can't seem to get beyond low-level software reuse, Mary-Jane Jarvis' development team at Hudson's Bay Co. has created six applications. They range from 100,000 to more than 4 million lines of code, of which 85% to 90% is reused code. What's more, she says, those applications were written in a Cobol-like language that developers actually were eager to try.

The tool is Netron/Cap, recently renamed Fusion, from Netron. But what is perhaps more important is the underlying concept behind it, called frames. Frames are software components that resemble objects in that they can include descriptions of data, the actions to be taken on that data or both. As frames are combined, they produce objects. In the process of creating object classes, the frames can adapt one another, says Paul Bassett, founder and vice president of research at Netron and author of Framing Software Reuse: Lessons from the Real World (Yourdon Press, Upper Saddle River, N.J.).

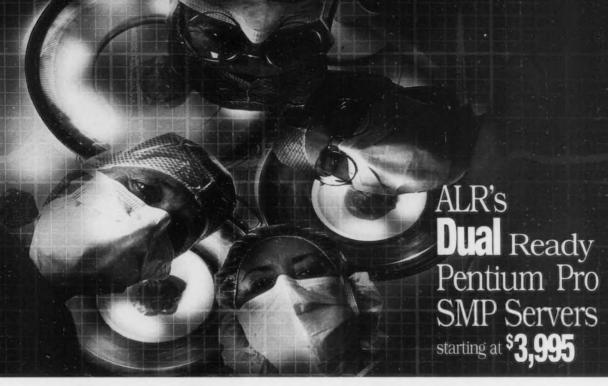
This "adaptive reuse" is important, he says, because it frees developers from having to create separate classes of objects whenever the application changes.

Does it work? "In terms of raw Cobol code, we're creating only about 10% to 13%" of the code required for applications, says Jarvis, director of development support at the Toronto-based retailer. "The rest is reused."

Frame technology may work, but it isn't magic. As with objects, frames require developers "to conceptualize reusable things, as opposed to just thinking in terms of Cobol lines" of code, Jarvis says. "Not everybody does that well." To help her staff over the "mind-set change," her company over the course of three years paid Netron something "in the low seven figures" for consulting help, a figure that doesn't count training costs.

Then there's the danger of becoming dependent on a relatively obscure, \$15 million software company whose tools could wither if they don't get enough support from the market. Jarvis says that's a limited risk because Fusion generates Cobol code that would still be reusable without the Netron tool set. Then there are the challenges of finding developers who won't give her a funny look when she asks if they know frames.

But deep down, Jarvis knows she isn't crazy because she's achieving more reuse than most developers who tried more well-known object-oriented languages. "If we had brought in Smalltalk," for example, she says, "I bet we wouldn't be where we are today," — Robert L. Scheier



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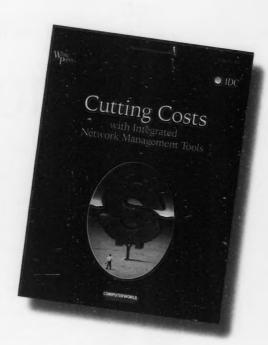
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IDC cites improvements in efficiency of deployment, user administration, and ongoing network operations, and provides figures for savings based on IDC's model for measuring the return on investment of these olutions. This White Paper also discusses some of the problems organizations face in implementing management solutions as well as the benefits they can gain when these solutions are deployed successfully.



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BIG CRY for Smalltalk

The word is out for Smalltalk programmers: Hiring managers are really speaking your language. BY LINDA WILSON

\$\frac{1}{2}\$ tephen Jacobs learned Smalltalk three and a half years ago while he was working on a sales and marketing application at Nortel, Inc. in Dallas. It turned out to be a smart career move.

Because he knew Smalltalk, Jacobs was recruited nine months ago for a job at BroadBand Technologies, Inc. in Research Triangle Park, N.C., a vendor of switched digital video equipment.

"An interesting byproduct [of learning Smalltalk] was this job, which started with a call from a headhunter at work," Jacobs says. He is originally from Atlanta and wanted to move back to the Southeast.

Jacobs' story isn't unusual in the world of Smalltalk, an object-oriented language developed at Xerox Parc in 1980. Because so few programmers know Smalltalk, those who do have no trouble finding jobs.

Mark Mojkowski is a perfect example. He received offers after each interview when he was looking for a position a year ago. He chose Kronos, Inc., a developer of automated time and attendance systems in Waltham, Mass., because he wanted to work on commercial products, not internal information systems.

Gaining ground

Smalltalk has been more of a niche language than

C, C++ or Microsoft Corp.'s Visual Basic. But it's beginning to become popular in certain areas of the U.S., primarily in areas where the telecommunications industry is strong, such as Washington, Dallas and Atlanta.

For example, Source Services Corp., a Washington-area recruiting firm, had more than 200 openings for Smalltalk programmers in the first half of this year, compared with 77 openings in the same period last year.

Demand for C++ talent, on the other hand, is declining.

For the same period, Source Services had 140 C++ positions, down from 175 a year earlier, according to Paul Villella, managing partner at the company's Tyson's Corner, Va., office.

But in Dallas, demand for



Smalltalk hasn't eclipsed C++. Companies that seek Smalltalk programmers are primarily in the telecommunications industry. They include Digital Switch Corp. and Sprint Corp., says Sean Napoles, a recruiter at DataPro Personnel Consultants, Inc. in Dallas.

NationsBank Corp. and Burlington Northern Santa Fe Railway also use Smalltalk, he says. Demand for Smalltalk programmers in Atlanta is limited to a few companies, but when positions become available, companies have a hard time filling them, says Tom Freeh, a managing partner at the Atlanta office of Source Services.

"The use of it is limited," Freeh says.
"The object-oriented language of choice in
the Southeast is Visual C++"

Hire first, teach later

If you're interested in learning Smalltalk, you should be able to find a position in which you can learn the language on the job. Because there are so few people experienced in Smalltalk, companies usually are willing to train experienced programmers after they hire them.

That's the situation at Kronos. The company has 10 programmers who work in Smalltalk and is looking for 10 more.

When Kronos began to use Smalltalk in 1994, it trained a team of four programmers internally. Then it hired additional people from outside the firm.

"We looked for people with Smalltalk experience, but it was very difficult," says Jack Rich, a senior software engineer at Kronos who was part of the initial Smalltalk team. "We did find a few."

But experience in software engineering doesn't

guarantee success in Smalltalk, says Y. Renee Lewis, director of software engineering for strategic billing systems at Bell Atlantic Corp. in Ariington, Va.

"We get a lot of Cobol guys that want to do [object-oriented programming.] Some of them have the aptitude for it, and some of them don't," Lewis explains.

Because Smalltalk is an object-oriented language in which reusable objects exchange messages, "it is a very good home for very creative thinkers who can look for patterns of behavior." Lewis says. "You need to be able to think in layers of abstraction."

Wilson is a freelance writer in Glen Ellyn, Ill.

BIG BUCKS FOR SMALLTALK

Typical salary ranges for IS professionals with Smalltalk skills:

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C++ training CD-ROM could benefit from a book

Excellent material tries to satisfy too many skill levels

By Jeffrey Gordon Angus

t's no pithy revelation that programmers who want to enhance their careers would do well to learn C++. But how to do it? Evening classes chop up material in pieces convenient for the schedule, not to optimize learning — function follows form. Classes aren't always available, and when you can crowbar your way into one, you can't count on a capable teacher.

The logical counterattack is to use one of the many trade books that overpopulate bookstores. They let you create a self-paced course. But it's gotten hard for consumers and publishers alike to differentiate among any of the cascade of C++ titles.

One recent offering has gone multimedia and interactive in an attempt to get noticed, with mixed results. Although many books include a CD-ROM to add dimension to what print can communicate, Prentice Hall PTR's "C & C++ Multimedia Cyber Classroom" skips the book entirely.

This lack of a printed book is one of the product's two noteworthy shortfalls. The computerized format limits the amount of text on any page, which is fine for the attention-deficit crowd. But almost all potentially successful programmers have at least average attention spans. FrameViewer, the hypertext authoring tool with which the text was set up, imposes several navigational blocks and nonstandard Windows features. You can't use arrow or function keys to turn pages, and because the pages are so small, you'll be turning them a lot. And if you double-click on a choice in a dialog box, it doesn't trigger anything.

The other stumble is that the content tries to please too many audiences — nonprogrammers and programmers who may or may not know C. The authors, Harvey and Paul Deitel, do a valiant job trying to help each target user figure out what to do, in what order. But Marketing 102 teaches that if you try to be all things to all people, you end up being of little value to anyone.

This almost qualifies as tragedy because the authors, a potent father-and-son combination, have constructed and beautifully cross-referenced a structured coding approach to learning C++. The examples are clear and readable, and they have designed picture-coded but-



nave designed picture-coded not tons to take you to optimization hints, gotchas and other categories. They have personality (actually, a pair of contrasting personalities that give you a point/counterpoint view of many issues), and they are very thorough

Unlike so many "multimedia" titles, this one is effective in using audio and video to reinforce the material. For example, the authors use audio narration to paraphrase the topic being covered. This helps the third of the population that learns primarily by hearing, and the audio code remarks can be very useful.

I want to like this title. At \$69.95, it's significantly less expensive than the three evening classes it would require to cover the contained course work. I like its structured coding approach, its attitude and the extensive material. But it could have been so much better. With a little interface work and a clearer consumer focus, this title could have been broken down into two or three more specific titles for nonprogrammers, programmers who don't know C and C programmers who don't know C++.

Angus is a systems analyst at The Data Works Ltd. in Seattle.

Jennifer Grey

Measuring your IS leadership potential

very year, I hold more than 200 career counseling sessions for programmers and other information systems technicians at more than 40 locations across the country. Each individual and each situation is different, but at more than 75% of the sessions, I will invariably hear the same statement: "I want to be a manager."

Too often, those who say this have no idea what it means to be a manager. They may have only a vague feeling that "unless I'm a manager, I'm not going to get anywhere in this organization."

To understand how far you can advance in the IS organization, you need to understand the difference between being an effective manager and being a real leader.

IS leaders are creative and quick-thinking. They can assemble a project team, get the confidence of team members and take projects to satisfactory completion. They get diverse team members from IS and business units to understand and embrace the same goals.

IS leaders understand and accept the business goals of the organization without following the path of least resistance — a delicate balance

Successful IS leaders must genuinely like working with people. They should possess a strong intuitive sense about the people on their team—both the IS professionals and business users—and how they will per-

form in given situations. A good leader has learned not to take criticism personally and can counsel friends on matters they don't want to hear.

Beating the odds

The plain truth is that perhaps only one IS professional in 10 has what it takes to become either a good leader or a good manager. The best and most rare — and the ones most likely to rise highest in the organization — combine traits of both.

I met one such rising star last year when a new technical employee walked into my office.

Although his resume showed years of experience on various mainframe projects around the world, there was little there to indicate management experience. Yet almost immediately you could sense this was someone ready to rise to the too.

He had a genuine desire to work with people and to get things done. He had an aura of confidence — something that is far different than charisma, which can be found at virtually any competence level.

As the months passed, this employee was selling the client on new electronic data interchange and other projects, and his internal managers

were all enthusiastic about his work. He not only looked like a leader, he worked like one. At the same time, he enthusiastically mastered all the management tasks, such as regular reports to headquarters, that are necessary to keep any organization moving and to free him to exercise his leadership capabilities. The trick with such employees isn't so much to develop them, but to find the right promotion for them soon enough.

Power outage

Just because you are technically, but not managerially, competent isn't the end of the world. Pushing for jobs simply because they offer more power

or prestige is often a sure path to career disaster.

I came face-to-face with this fact early in my career as a human resources manager. Against my better judgment at the time, I went along with the promotion of a gifted technologist. His motivation for advancement was more for the perks of office than the substance. He didn't

want to listen to subordinates, let alone counsel them. And he turned up his nose at the paperwork that goes along with management.

Not only were his subordinates unhappy — and actively applying for transfers — so was he. His failure to create a true IS team led to all kinds of problems. The worst result, from his perspective, was the erosion of his own technical skills.

Like many other would-be IS managers, he hadn't grasped how much maintenance of technical sharpness depends on day-to-day, hands-on activity. And, as it turned out, technology was really his first love.

Happily — and none too soon — the manager was persuaded to return to his previous role as technologist, where he ended up rebuilding a solid career. In fact, most first-class companies have made a point of creating career tracks where heavy-duty technologists receive just as much money or more than managers — not to mention a good degree of power and prestige. ■

Grey is director of operations at Complete Business Solutions, Inc., a computer systems integrator and software development company in Farmington Hills, Mich. Her Internet address is JGrey@cbsing.cbsinc.com.

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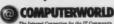
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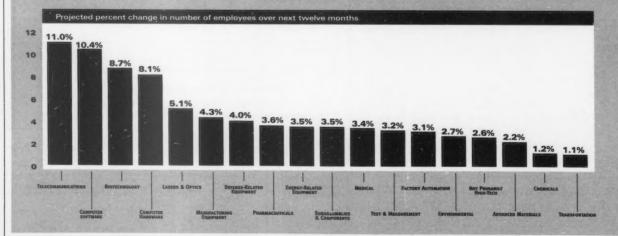
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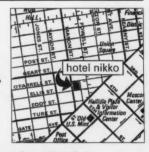
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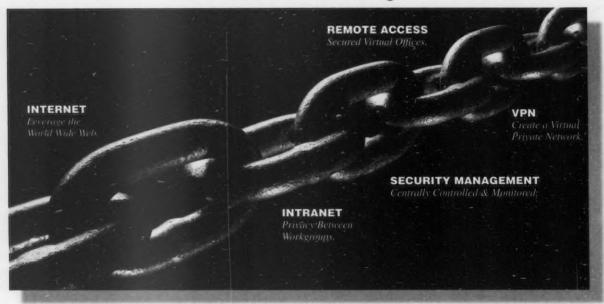
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Marketplace

Intranets don't have to be costly

IS organizations already have a lot of resources at their fingertips

By Amy Malloy

If you want to set up an intranet, you should start by looking around the office. Existing resources and equipment often prove adequate for a company's first attempt at an intranet, which is a private Internet for exchanging information within an organization.

For example, a company can use an old PC to set up a server, tap employees for ideas and topics, download freeware and use the same server for the Internet and an intranet.

If space is available, an intranet can be built on an existing server. If not, it's inexpensive to set one up. "Any old spare computer, generally a PC, can be used to set up a Web server," says Ira Machefsky, an Internet analyst at Giga Information Group in Santa Clara, Calif.

"If a company had systems that had space on them, there would be almost no software or hardware costs. If it had to put a system in, it may spend \$6,000 for hardware," says Tim Sloane, director of Internet messaging at Aberdeen Group, Inc. in Boston.

Existing network access is key

If a company is already networked and connected to the Internet, setting up an intranet shouldn't be too costly.

"The real cost is ensuring that everyone has network access," says Stan LePeak, program director at market research firm Meta Group, Inc. in Stamford, Conn.



"To use freeware effectively, you need employees [who] are knowledgeable."

> — Tim Sloane, director of Internet messaging, Aberdeen Group

"Having TCP/IP or some kind of protocol on the network — that is 90% of the battle." agrees Clay Ryder, an analyst at Zona Research, Inc. in Redwood City, Calif.

Freeware pluses and minuses

For some companies, freeware is another way to save money. There are advantages and disadvantages to using freeware. The practicality of its use depends on the company and its information systems expertise.

"To use freeware effectively, you need employees [who] are knowledgeable," Sloane says. If a company has such resources, he says, it needs to ask, "Is that where we want to put these valuable people, or do we want to bring in technology from a vendor?"

Besides, as LePeak points out, "Most of the offthe-shelf products are free or cheap."

Start slowly

A company can start out inexpensively and later move the system to a more advanced platform. The open nature of the Internet makes such upgrades easier than upgrades undertaken with other technologies.

"Once a company gets its feet wet, it can go to products that improve the efficiency of the organization," LePeak says.

Analysts recommend testing the waters and stress that companies don't need a full-blown intranet to start. "Given the fact that you can download evaluation software, companies can start ex-

Conve Data perimenting on this. The intranet can then be moved to a more substantial system and environment," Machefsky says.

Talk to the users

Employee input should be incorporated into the planning process. With user advice, companies can avoid taking wrong turns with the intranet. "Get a dialogue going where there had been animosity in the past," Sloane says.

Departments should build on what other departments have done. For instance, "If [the IS department] put up an intranet, you want to piggyback [human resources] on that," LePeak says.

The thing to remember, analysts say, is that an intranet is a work in progress. They recommend starting small. Upper management doesn't have to plan an intranet well in advance. "The Internet is a grassroots kind of phenomenon," Machefsky says.

Getting ready for an intranet

Before a company even examines cost savings with an intranet, it needs to acclimate employees. Sloane suggests the following format:

- ▶ Get the Internet in front of as many business units as possible so they become aware of its capabilities.
- ▶ Build a community of users, and start a discussion group through news groups or Lotus Notes so employees can discuss intranet pros and cons.
- ▶ Once the need for an intranet is established, IS can implement it. ■

Malloy is Computerworld's assistant researcher.

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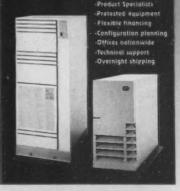
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Finance & Investing

Next week: A 'Foolish' review

Investor Power!

hile most investors go online to quietly research stocks or chat with colleagues, an increasing number are hoping to use the online forums to make a whole lot of noise.

Welcome to a new era of investor empowerment, where individual investors gather online and collectively speak out against companies or brokers when they are unhappy with them or suspect wrongdoing.

"You could write a letter to a CEO that will be read and answered by some low-level administrator, or you could go in together and send something [as a group] that means more," says Trey McAtee, a member of the Silicon Investor forum (www.techstocks.com) and a stockholder in several high-technology companies.

In recent months, there have been several incidents of investors banding together to throw their weight around. None of these has turned the industry on its ear. Nonetheless, they demonstrate the potential power of online investor activism.

By Julie Bort observers say.

For example, two Banyan Systems,

Inc. stockholders earlier this year posted notices on various online forums to encourage other stockholders to vote against David Mahoney, the company's chairman, if they were dissatisfied with the networking firm's performance. Banyan's stock, which had once traded as high as \$26 per share, was down to about \$6 at that time.

One of the posters, Jerrold Patz, said he received about 150 responses from other disgruntled stockholders. While Mahoney was reinstated by an overwhelming majority at the company's annual meeting at midyear, the effort showed Banyan that "there is more scrutiny on them." Patz says.

Feedback is feedback

In response, Banyan is diplomatic. "Positive or negative, you want to know what investors are thinking," says Ron Schneider, director of treasury opera-

tions. Online forums "give them a more unified voice in approaching management," he says.

Another example took place on the Silicon Investor World Wide Web site. It involved ETrade Securites, Inc., an online brokerage firm in Palo Alto, Calif., and a dissatisfied customer.

The customer, identified online as Blaine Flaherty, posted notices on Silicon Investor forums seeking other unhappy ETrade customers who would consider a class-action suit against the online brokerage firm.

Flaherty, who wasn't available for comment, claimed in online postings that ETrade's poor service had caused him to lose money. Flaherty received numerous responses from other ETrade customers claiming they had experienced similar troubles with ETrade. Thus far, however, a lawsuit hasn't been filed.

An ETrade spokeswoman says the company is aware of this online activity. "It's like the Wild West." says Rebecca Patton, senior vice president of marketing at ETrade, of online forums. "It's completely free, and there are no rules. [This customer] is using the forum to solicit interest in filing a lawsuit, and that's not illegal. But it's an interesting use of the forum."



Investors say online forums are an inexpensive and efficient way of getting themselves heard.

Patz says it would have cost him thousands of dollars to hunt down Banyan stockholder mailing lists and send individual notices. But by posting messages

"Investors are able to contact people they could never have reached."

 Michael Gutierrez, American Association of Individual Investors

online, "I could reach tens of thousands of people at no cost," he notes.

However, not everyone agrees that online activism is good news for the industry.

A spokesman for the National Association of Investors Corp. (NAIC) says

online forums and discussion groups aren't intended to rally troops of investors for protest. "It seems to me that the spirit of online forums is to share information," says Herb Barnnett, president of the NAIC's computer group, which handles the association's Web site (www.better-investing.org) and its forum on CompuServe.

"When someone starts running a crusade, it not only turns people off who are there for advice and information, but it puts the whole thing in a bad light," he says.

Other observers contend that reaching out to others is exactly what the Internet is all about. "For communication, [online forums] are an excellent resource," declares Michael Gutierrez, associate editor of the American Association of Individual Investors, Inc.'s "Computerized Investing" publication. "Investors are able to contact people they could never have reached."

And activists such as Patz say they conduct themselves professionally and give other investors the option to respond or not.

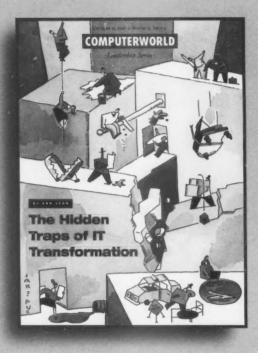
"What we did was post an open letter," Patz says. "We didn't throw any bombs. There were no pitchforks, no hangings. We didn't send a bazillion Emails to aggravate people."

Bort is a freelance writer in Dillon, Colo.

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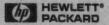
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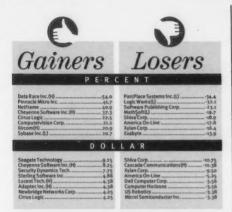
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Industry Almanac

LAN WANna-bes get boost

Diversify or die

Although the stakes aren't quite that high, internetworking vendors are dropping big money on companies whose products let users tie LANs and campus networks to wide-area networks.

Diversification is also apparently good news for internetworking stocks, which continue to climb as more vendors enter the WAN equipment market. Overall, internetworking stocks have been up in the past month. One key reason: Analysts consider the WAN equipment business a gold mine.

3Com Corp. (Nasdaq:COMS) stepped forward last week and proposed a \$245 million acquisition of privately held WAN access products maker Onstream Networks, Inc. in what would be the second LAN/WAN marriage in a month. After that announcement, 3Com's stock increased more than 2%, from \$65.13 to \$66.88 per share.

Although 3Com, Cabletron Systems, Inc. (NYSE:CS), Bay Networks, Inc. (Nasdaq:BNET) and Cisco Systems, Inc. (Nasdaq:CSCO) have made their money on LAN products such as hubs, routers and switches, they are relatively new to the world of WANs.

"For the most part, these vendors know the LAN cold, but they don't know the WAN and are scurrying to beef up their presence in this key area," says Joe Noel, a technology analyst who tracks 3Com at Hambrecht & Quist, Inc. in San Francisco. "The Onstream acquisition will be a good fit for 3Com."

That's because 3Com sells Asynchronous Transfer Mode (ATM) switches that handle voice, data and video at high speeds on campus networks. Onstream, a Santa Clara, Calif., neighbor of 3Com's, makes products that link those ATM LANs to ATM WAN services offered by local and long-distance carriers.

Word of 3Com's intentions comes just a few weeks after Cabletron announced plans to acquire privately held **Netlink**, **Inc.** in Framingham, Mass., for about \$160 million. Netlink makes WAN access devices for frame-relay WANs, which operate at lower speeds than ATM.

a 3Com's financial performance has improved over the past few years as the company diversified through mergers and acquisitions. 3Com posted \$1 billion in revenue and a \$10 million loss in fiscal 1994 but improved that to \$2.3 billion in revenue and net income of \$178 million in fiscal 1996.

"The WAN is the future for campus networking vendors, whether you're talking about connecting dispersed sites into a corporate data network or whether you're looking at Internet access," says Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy. — Bob Wallace

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Pure and Atria have merged

No, the world hasn't changed.

Network television hasn't improved.

Taxes haven't become any less painful.

Your kids haven't reconsidered body piercing.

But the combination of our software diagnostic products,

software development enterprise products,

and application testing products

has created an Automated Software Quality solution

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Which means you'll be able to build better software.

We've merged.

On second thought, maybe the world has changed just a little.



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Munaging Rick Saia (508) 820-8118

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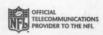
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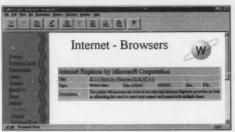
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NetSync's Web site offers its WebPatch Difference Engine - technology that allows users to download software updates

Laptop bugs

CONTINUED FROM PAGE 1

time on quality," said Andrew Seybold, a mobile computing consultant in Boulder Creek, Calif.

Some of the problems come with the territory. Because laptops require more complicated manufacturing skills than desktops, they develop bugs more easily than PCs, industry observers said. And vendors have been caught off guard by skyrocketing demand for laptons.

'You're putting an awful lot of power into a very small box," said Mike McGuire. an analyst at Dataquest in San Jose, Calif. "And peo-

ple throw them into overhead bins on airplanes. ... They're much more of an engineering challenge than desktops.'

TI traced the Extensa 500 problems to inferior metal used in the hard drive. Company officials said the problems have been fixed in its upgraded 570 line.

McWhirter said his Brea, Calif., firm is negotiating with TI for replacements. Though TI has been responsive, some damage has been done, he said. "Many of our users were pretty computer illiterate, and the many problems we have had have tarnished our ability to gain acceptance for the applications," he said.

TI isn't the only vendor users are complaining about. For instance, some users said ThinkPad 760 notebooks would lock up when they tried to type on external keyboards in a docking station, IBM PC Co. last week said it is shipping a fix — a cable adapter - to users.

Asmar Madyun, manager of desktop services at AT&T Network Communication Services in Berkeley Heights, N.J., said he has had Tecra 500s from Toshiba laptop, they want it to be reliable."

American Information Systems, Inc. in Irvine, Calif., that lock up while in use. Newer Tecra models, the 720s and 730s, have also had some problems, although they are fewer, Madyun said.

Toshiba officials said a BIOS upgrade and software configuration upgrades are available for the Tecra 500s on the firm's World Wide Web site: www toshiba com

Lanton software and configuration issues can be equally confus-

Bob Martin, information systems manager at G. W. Hunter, Inc. in King of Prussia, Pa., said it is impossible to keep track of all the updates and fixes in

the market.

He was recently told to delay buying computers preconfigured with Windows 95 unless they included the OEM Service Release 2 that Microsoft Corp. recently issued. But he later found out that the release didn't apply to machines he would be

Compaq Computer Corp. is trying to help its PC and laptop users by giving them CD-ROM-based decision-support information.

"We advise our customers buying any product to go ahead and check on our Web site for updated drivers," said Greg Young, senior software business manager at Compaq.

This week, NetSync Corp. in Carlsbad, Calif., planned to open its Web site (www.webpatch. com), offering its WebPatch Difference Engine - technology that allows users to download software updates.

But McGuire said, "As laptops become more prevalent, vendors will have to invest more in the fact that they actually work. There is no question these machines are much more complicated to make than desktops. But when someone is paying up to \$7,000 for a

Year 2000 skills offer long-term payoff

CONTINUED FROM PAGE 1

what make them such opportunities, Hall told attendees at Gartner Group's Symposium/ ITxpo '96 in Lake Buena Vista, Fla., last week. For example, year 2000 managers must not only fix their systems so that they recognize four-digit years, but they also must make sure every related application at a supplier or a customer can tell the

2001 and 1901. Just finding those systems is "a supply-chain issue, a business process analysis issue." Hall said. Going on to fix them will teach IS staff valuable lessons in risk management and project management, he added.

between

Chance to shine

difference

"I personally see it as a career opportunity," said Carl Roecker, project leader for the corporate year 2000 team at Texaco, Inc. in Houston, It has given Roecker "an opportunity for exposure to upper management" that will grow as the year 2000 is recognized as more of a business issue than a technical problem, he explained.

For Lauris Nance, coordinating year 2000 work at credit information provider Equifax, Inc. in Atlanta allows her to

work not only with business and technical experts, but also with "legal staff, marketing, corporate communications, your controllers, your auditors as well as your senior officers. It's very good exposure.'

It also provides direct contact with outside customers the assistant vice president wouldn't meet if she didn't have to work

IS

careers

with them to ensure their applications won't corrupt Equifax's year 2000-compliant tems.

After sharing some technical tips at a recent conference, for example, a major Equifax customer told Nance, "In the last 30 minutes, you saved me a minimum of three months' effort" in his year 2000 work.

"It can be career-limiting to always have an IS label," Nance said. "What you're doing is removing that label [so] people may place more value in your experience and your knowledge!

The global view of the enterprise gained through fixing an organization's year 2000 problems also makes IS managers more valuable in the future.

There aren't a lot of people on that comorate ladder who would have a total enterprise perspective." Nance said. That's a point not lost on outside vendors who hope to use year 2000 contracts as a foothold to take future work away from internal IS departments.

"It's clear what they want to do," said Jim Jones, managing director at The Information Management Forum, an association of business and IS executives in Atlanta. Not only outsourcers but also consulting firms such as Coopers & Lybrand and Andersen Consulting are opening year 2000 practices "so they can come back later and say, 'Listen, we've had a chance to look at your entire information systems infrastructure" and are thus perfectly suited to take over application maintenance.

This is a test

If IS managers can handle year 2000 conversion processes that involve tens or even hundreds of millions of lines of code, they will also have high-demand skills in areas such as project management

Think of all the ways year 2000 [work] teaches best practices," Hall said. He urges IS managers to "put your best people on the year 2000, not the people sitting on the bench."

Costs of ignoring year 2000 problem grow with company size. See page 88.

Year 2000 woes lead to higher prices

s customers start to spend heavily on year 2000 work, vendors are obliging by raising their prices

"Heightened demand" was cited by IBS Conversions. Inc. for its plans to raise pricing on its code-scanning services by 10% to 15% in January, said Roger Byrnes, director of the Chicago-based consultancy. IBS Conversions' current scanning prices are 1 cent to 3 cents per line of code for nine languages, including IBM's AS/400 RPG and Cobol languages, Byrnes said.

Viasoft, Inc., a Phoenixbased year 2000 software and services vendor, plans to raise its software prices 30% to 60% in January. The price hikes cover the cost of supporting 15 to 20 additional programming languages rather than increased customer demand and "market panic," said Jean-Luc Valente, director of marketing at Via-

As firms compete for increasingly scarce year 2000 resources, year 2000 prices will rise sharply, said Jim Duggan, technology director at First Albany Corp. in Stam-

ford, Conn. He cited estimates from Meta Group, Inc. that the cost to convert each line of code will rise 25% to 30% next year and rise another 50% to \$2 per line in 1998.

Some year 2000 vendors have offered to freeze prices for their customers in return for five- to 10-year contracts to maintain the systems they fixed, Duggan said. Those vendors, he said, are trying to "convert a single-incident kind of income into an lincome] stream they can actually build a company on."

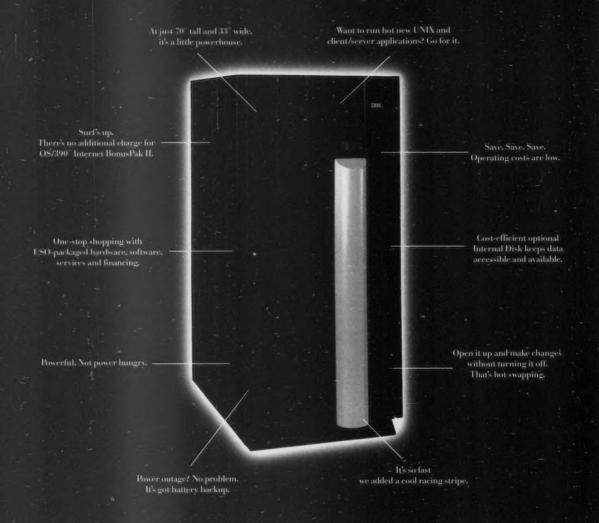
- Robert L. Scheier and Thomas Hoffman











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David Coursey

Netscape: Affirmative action for Unix, Mac?

here's a story about Bill Gates that has taken on so many of the qualities of an urban legend that only Bill himself knows whether it's true. In Microsoft's infancy, the tale goes, the company lost a \$100,000 sale. Gates' response speaks volumes about competitiveness: "It's not just that we lost the \$100,000," he is reported to have said, "it's that they got it."

Whether Chairman Bill said these words, I have little doubt he'd agree with them. Which brings the question: Why hasn't Netscape figured out that it's dumb to help the competition?

Every time someone downloads a Windows or NT version of a Netscape product, Netscape loses or only comes up equal, and Microsoft wins. Conversely, every time a piece of Netscape software is loaded on a Macintosh, Unix box or, soon, a network computer, Netscape wins and Microsoft loses. If this goes on long enough, Netscape will have dug itself a pretty big hole.

My idea is that Netscape should do more to promote its non-Microsoft platforms. When I recently suggested this to a group of Netscape executives, you'd have thought I'd dropped a snake on the lunch table — people fell over themselves trying to get away from me and my weirdo idea. I was stiffly told that the official Netscape policy is one of absolute platform neutrality.

But suppose Netscape changed its mind. What would such a change mean for customers? First, NT would no longer be the easy default choice for servers. Users would have to think about which server was best for which application. If Netscape were to work with other operating system developers the way Microsoft works with itself, we'd

see operating systems with magic features for Netscape to take advantage of. Then customers would really have to consider the options. Heck, somebody might even get fired for choosing Microsoft.

This plan requires that Netscape build software so good, so effective, that no matter which operating system it ran on, customers would buy it. If Netscape pulled this off, it would surely become, if not the next Microsoft, the company that gated everything Microsoft did.

I understand why Netscape officials think it would be suicidal to shun Windows and NT in favor of Unix and, gulp, Mac OS. But does the company really have to make all its platforms absolutely equal? Simply reminding customers early and often that Unix is a good choice for an Internet server would be a start. Maybe non-Microsoft operating systems could get top billing on the Netscape home page — the way American

Airlines used to list its flights first on its Sabre reservations system.

Netscape also could get behind Apple's fledgling server business. (Apple's Network Server is supposedly a screamer, but does anybody know this

besides Apple employees and a handful of analysts?)

Finally, Netscape could make Unix the first test bed for its more experimental features, ensuring that IS departments trying to keep up with the latest betas have at least one Unix server around.

And no, I don't think this is discrimination. I know affirmative action is unpopular in some circles these days, but this is one place where it really makes sense. Call it enlightened self-interest.

Coursey is an analyst, consultant and editor of "coursey.com," an online newsletter at www.coursey.com. He plans to trick-or-treat dressed as Mozilla, the Netscape mascut, before changing into a Microsoft Bob costume. His E-mail address is david@coursey.com.



Java, Java . . . everywhere?

very time network computing advocates pop up with another cigar-box-thin client, they say it will run Java applications. What Java applications? There are no end-user Java applications in sight. Well, I take that back. J Stream in Vancouver, Wash., recently showed me a word processor that was "compelling for the network computer," said Dennis McNannay, J Stream's vice president.

How did his firm happen to produce a Java word processor? I asked.

"We missed the browser market," McNannay said. I'm missing the Java applications market.

Corel promises a Java version of WordPerfect and is demonstrating it at industry shows. But demos and reality are two radically different things. Your network computer could turn to rust before a Java office suite shows up.

In desperation, I turned to Microsoft, king of desktop applications. Microsoft has been feeling magnanimous of late. It's willing to fund third-party Macinosh developers to prevent Apple from going out of business, according to *The*

Wall Street Journal. (Microsoft denies the story.) Surely, I thought, it would support the Java network computer.

I'd been getting reports for months about the legions of Java programmers that Microsoft was hiring. "Tve heard Microsoft employs 2,000 Java programmers," I told Mary Anderson, director of market development at SunSoft recently. "It's 2,200," she corrected me without hesitation.

But when I bounced that number off Cornelius Willis, group product manager for Internet development tools at Microsoft, he said, "That's wacko."

"That would mean one in every eight Microsoft employees was a Java programmer," Willis said. The way he said it convinced me it was more likely that one in every eight Americans was a telephone operator.

"Is Microsoft creating Java desktop applications?" I asked Willis. Getting an answer was like asking a coyote to part with his coat. Java is a pretty good lan-

guage, Willis said. "But you don't get a lot of things that you'd expect," such as APIs for audio, QuickTime video or Direct Draw.

"Is Microsoft working on Java versions of its applications?" I asked again. Microsoft's just-in-time

compiler for Java was the best out there, "five times faster than Symantec's," Willis answered.

"But what about applications?" I persisted.

"No," he said. Finally! "There's no effort under way" to create Java versions of Microsoft applications. "We're in the investigative stages right now."

At that bad news, I gave up the search. There are Java development

tools and compilers sprouting all over. There are impressive Java applications in manufacturing, sales force automation and help desk management. But standard desktop applications in Java are still a ways off.

By the time I get the energy to renew my search, intranets will have crept into

most organizations; the applications written for them will use Java and will look nothing like the applications we have today. They will continuously update themselves with fresh source code. They will download information sought by their users from

the Internet and will deliver the programming that's needed with data.

Java will give birth to a new breed of applications that make better use of networks. If I were Microsoft, I would investigate further.

Babcock is Computerworld's technical editor. His Internet address is charles_babcock@



Information Highway ROAD TRIP



In the spirit of Ken Kesey and Jack Kerouac, four Web developers set off in a Volkswagen bus early this month for a West Coast road trip. Their mission: to study Internet culture with manon-the-street interviews. Check out the merry adventures of the neo-beatniks in the diary posted at alt.mcafee.com.



Trying to personalize your little corner of cyberspace? Zelco Industries in Mount Vernon, N.Y., offers the Computer BudVase for \$13. This clever accessory has a flexible arm and suction cup that attaches to your computer or monitor and comes with a standalone base.

attaches to your computer or monitor and cowith a stand-alone base.

Digital snafus

In March, static electricity apparently caused an election computer to miscount results of a Polk County, Ore., tax measure. After officials sprayed the carpet around the computer with Downy Fabric Softener, the tax proposal passed, *The Wall Street Journal* reported.

An automated toll collection system tested by the California Department of Transportation was deemed a failure because it couldn't achieve the required 99.95% success rate, the San

Francisco Chronicle reported. The system could do no better than 99.1% because it had trouble distinguishing among different types of multiwheel vehicles to charge the correct toll.

Investigators said American Flight 965 crashed into a Colombian moun-

tain last December because a pilot entered the wrong code into the autopilot computer. The plane was supposed to fly to "Rozo" radio beacon. But the pilot accepted the first entry in the database of "R" beacons, which was the "Romeo" beacon, more than 100 miles and 90 degrees in the wrong direction.

A data entry error sent a surprise gift of \$320,000 in mutual funds to investor Roger Harris in April, The Wall Street Journal reported. A bank clerk wiring funds from a corporation to Invesco Funds Group in Denver mistakenly typed Harris' old Invesco account number. (Harris returned the funds.)

asty Fries in Blue Bell, Pa., has developed a vending machine that cooks and dispenses freshly cooked french fries in about a minute. Inside the machine is a patented robotic arm that dips the fries in to hot oil.



Inside Lines

Lockheed revisits Mac attack

Another operating systems warhead is about to be launched at Lockheed Martin Missiles & Space in Sunnyvale, Calif. IS management at the world's second-largest Macintosh site is again proposing standardizing on Wintel. In 1995, an uprising among Macintosh users dissuaded management from abandoning the Macintosh. This time, however, Apple users aren't being given much of a chance to voice their opinions. A decision is expected by the first of the year, Lockheed sources said. One Lockheed insider said that "management already knows what the users want, and they just don't care to hear it again."

Speaking of Apple and armaments

Anchorhunk Tom Brokaw was in Hartford, Conn., last week covering the presidential snooze-athon until late Sunday night, but he managed to appear sharp as a tack at 9 a.m. in Orlando, Fla., the next day. He moderated the keynote panel at last week's Gartner Group infofest. At one point, while Apple CEO Gilbert F. Amelio was whining about Wintel domination, Brokaw jumped in and asked Amelio what Apple could realistically do to stop Microsoft. Amelio's response: "nuclear weapons."

They've got the tools

Informix Software plans next week to announce remote management tools and expanded replication capabilities that will be bundled with upcoming releases of its relational databases, according to sources close to the company. The tools will also include support for administering its databases from Web browsers. The features will first appear early next year.

Digital readies 600-MHz chip

Digital is getting set to reveal technical details for a superfast Alpha chip. More information about the chip, which may reach speeds of 600 MHz, is expected to trickle out at the upcoming Microprocessor Forum seminar in San Jose, Calif., according to sources close to the company. Meanwhile, the company is reportedly on schedule for a first-quarter 1997 release of the low-cost 21164PC chip that it is jointly developing with Mitsubishi of Japan.

Strategy shift at Tandem

Tandem Computers has scheduled a major announcement for the week of Oct. 30. Analysts speculate that the high-end server vendor may be hitching its fortunes closer to the Wintel bandwagon with a line of highly-scalable Windows NT servers based on Intel's Pentium Pro chips. The servers will incorporate Tandem's ServerNet cluster interconnect technology.

Lotus plans Web software

Lotus this week will announce a family of software products based on its Net.Apps line of Web applications. Net.Apps lets users build applications to easily create and improve Web pages without requiring any programming on Lotus' Notes platform. The planned products will build on the Net.Apps framework and will expand Lotus' Web strategy beyond corporate customers to include general consumers.

Although IBM now sells StorageTek's Iceberg mainframe disk arrays under its own Ramac brand name, loyal Iceberg users can't get used to sleeping with the former enemy, as it were. So at Forum, StorageTek's annual user conference, attendees took to calling IBM's Ramac Virtual Array Storage by a catchier name — "Ramberg." If you have any news tips to share, don't be shy about contacting Computerworld's own Rambo, news editor Patricia Keefe, at patricia keefe@cw.com or (508) 820-8183.

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